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*East view of Office and Packing House.  
Showing Barberry and Spirea V. II. in full bloom, Lombardy Poplars, Boston Ivy and Sugar Maple.*

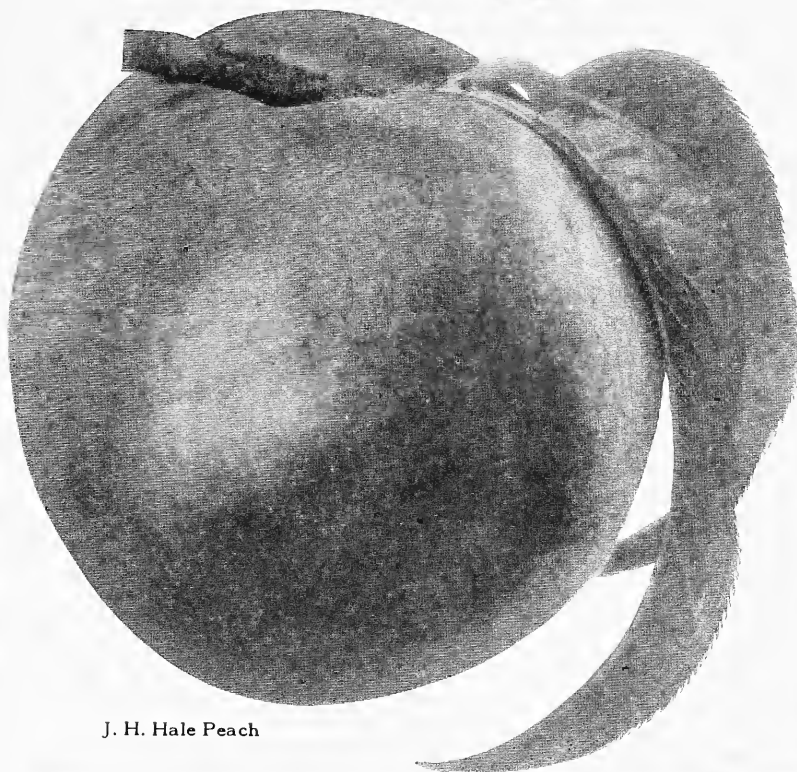


*West view of Office and Packing House taken in May, 1924.  
Track in foreground is Kansas City Southern Railway—Spur track comes to our door.*

*"Yours for Growing Satisfaction"*  
**NEOSHO NURSERIES CO.**  
 NEOSHO, MISSOURI.



The Delicious Apple



J. H. Hale Peach

## Enjoyment of Fruit or Flowers

HOW good the taste of fruit picked fresh and fully ripe! Many people never realize it. Yet it is comparatively easy to attain. It only requires some thought, a little labor and surprisingly little money.

Most everybody has room for at least a few grape vines, trained over a trellis, wall, fence or on a building. They are attractive, too.

If you are looking for profit in fruit growing you can find it, as many others do.

But in any case your success depends chiefly upon yourself. When you buy such things as a pair of gloves, or an automobile, you get the benefit and satisfaction of their use at once. But with nursery stock, with few exceptions, perfection of fruit, foliage or flower comes only with time plus some care and attention. Your rewards will be in proportion to your careful thought in planning, to your insistence in securing trustworthy trees or plants, and to your thoughtful care of them after they reach you.

The same is true with making one's home more attractive and more valuable with ornamental trees and plants. Many hesitate because they do not realize how much can be accomplished with a few well-chosen, well-placed shrubs, vines or trees.

We hope this book will help you to enjoy growing satisfaction.

THIS CATALOG is made possible by our Customers who have told us what they like, and why they purchased from us. Read what they have written us:

"Because I am convinced you are a reputable concern anxious to build up a reputation on the basis of high grade stock and square dealing." "Because you do not offer high-priced novelties of uncertain value and unknown adaptability."

"Because I failed to find a single extravagant statement." "Because you take such pains to help the planter." "Because you give so much easy-to-understand information of value." "Because you do not confuse me with superlatives."

Yes, indeed, we are indebted to our Customers for their patronage, their recommendations of us to their friends, for their expressions of satisfaction in their dealings with us, and also for the constant reminder that the best advertisement is a pleased customer.





## “Yours For Growing Satisfaction”

*To Inquiring Friends:—*

When you buy something whose value you can judge by examination you do not think so much about what is back of your purchase. But when you buy something whose real worth cannot be determined except by actual use, then indeed, you want to know from whom you are buying.

Nursery stock is in this latter class. You can see size of tops and roots, but you cannot see vitality and trueness-to-name. These essential qualifications are proved only by time.

You will therefore be interested to know that we have a capital of \$150,000 owned by citizens of Neosho; 800 acres of good land (160 in bearing apple and cherry); packing houses and office covering 37,000 square feet; other buildings, adequate equipment and materials; and an organization experienced in growing, handling and packing nursery stock. These are all necessary to give permanent service to the customer. He wants to know the nursery from whom he buys will be in business in the future when his trees and plants should come into satisfactory bearing or attain their full beauty of flower and foliage.

Yet, the most favorable soil, the largest capital, the best of equipment, and the longest experience will not produce a quality product unless they are used with the right spirit—with the determination to put quality into the goods—with an earnest desire to serve the customer.

Realizing this fact we keep constantly in mind, in the minds of every employee, that we must produce and deliver a quality product.

So we adopted this watchword, or motto, to govern all our operations and all our dealings with our customers, many of whom tell us we have chosen the right slogan.

“Yours for Growing Satisfaction,”

NEOSHO NURSERIES CO.

*Joseph Hazen*  
President.

## The Home Fruit Garden

**W**ELL-RIPENED, sound fruit is a valuable food and in some form, fresh, canned or preserved, should form part of every meal. Fruit is necessary especially for the proper growth and health of children.

"Home-grown fruit is desirable—

"Because it reaches the family fresh and in the best possible condition.

"Because the family has fruit of which it would often be deprived if it had to be purchased.

"Because, if the proper varieties be selected, a continuous supply of fruit of superior quality may be secured, regardless of market prices.

"Because any surplus may be sold without difficulty, or may be canned, evaporated, or otherwise conserved for use when fresh fruit is not available.

"Because the care of the home fruit garden provides for spare time congenial and profitable occupation which is in reality recreation for those who enjoy seeing things grow."—From Bulletin 1001, "Growing Fruit for Home Use," U. S. Dept. of Agriculture.

"Thousands of persons who have the opportunity to grow fruit for home consumption either neglect to set out the trees or plants, or if they have them, fail to give them the care that brings success. Formerly one of the cheapest commodities used in the household, fruit has now taken its place in the list of high-priced foods and its production for home use means a large saving in the family living expense. Even the grower of fruit in small quantities can now dispose of any surplus at a profitable figure. Home-grown fruit should no longer be regarded as an incident in family life but as a distinct asset."—BETTER FRUIT, January, 1920.



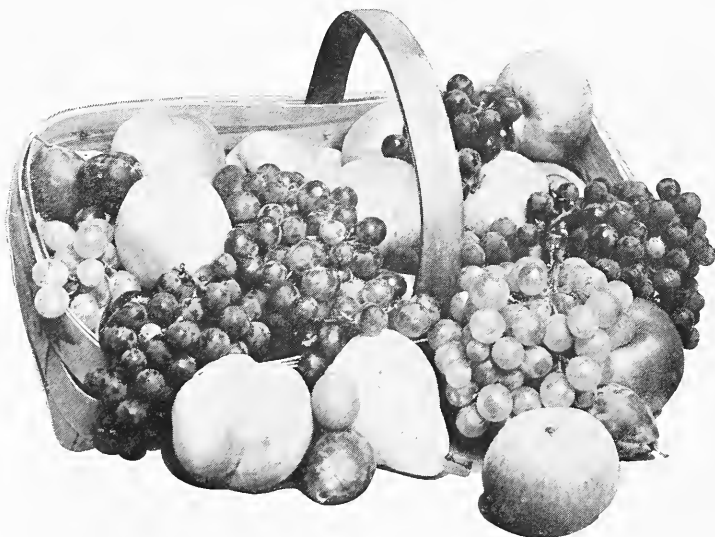
**A Few Fruit Trees, Plums, Peaches, Pears, Cherries, Apples, and Small Fruits in a Garden, or Even a Back Yard, Pay for Themselves a Hundred Times Over.**

**A**NYONE with a little ground can grow some fruit—at least one grapevine on the fence, arbor, wall or building. The main thing is to make up your mind to have fruit and then take the necessary steps to grow it. Just take each step at a time, outlined as follows:

It is desirable to have the garden near the house where it is likely to receive better care and the fruit can be gathered more easily and quickly. But it is better to have the fruit garden some distance from the house than to sacrifice success by planting on a poor site or soil.

### SITE

A site that is higher than the land around it is preferable since it has better air and water drainage, minimizing danger of loss from frost and avoiding wet feet, which most fruit trees and plants abhor.



### SOIL

An ideal soil, mellow, deep, fertile loam, is not often available and it may even be necessary to go to considerable trouble to improve the dirt you have; for instance, for fruit trees dig a hole 5 feet in diameter, throwing the surface soil to one side, then digging out the subsoil to a depth of 6 to 12 inches, putting it in a pile by itself. Then throw in a few shovelfuls of well-decayed manure. Next throw in the surface soil. In this set the tree and use other surface soil to fill the hole. The other pile of subsoil can be scattered on the surface. Well-rotted manure, wood ashes and ground bone or cottonseed meal can be mixed in with the surface soil used to fill the hole, but care should be taken to avoid having too much of any fertilizer come in contact with the roots. For gooseberries and currants the holes should be about 2 feet in diameter and for raspberries and blackberries dig a trench 15 to 18 inches wide.

### SELECTION OF VARIETIES

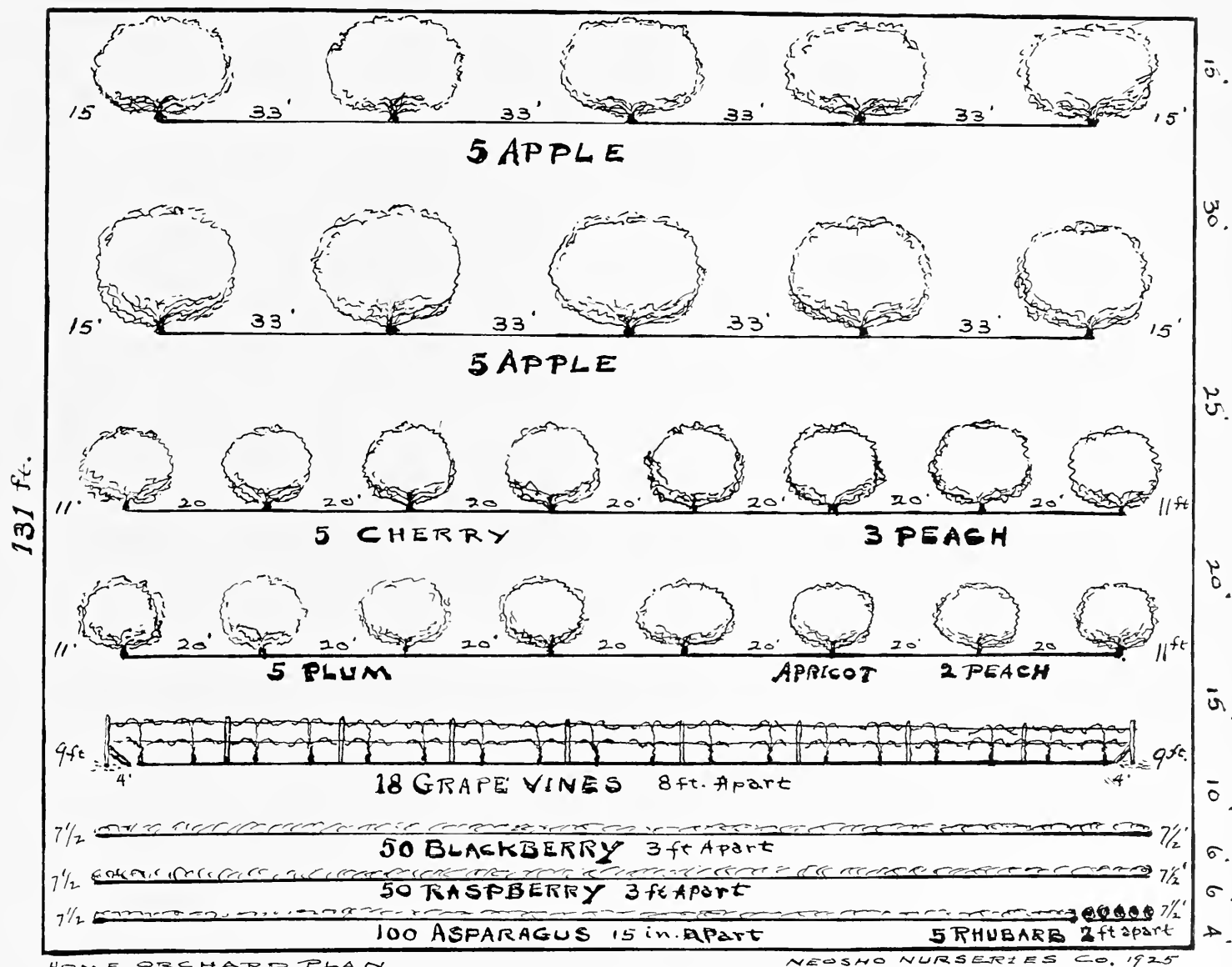
Quality for dessert and cooking, and a selection ripening over a long season are the main factors in the choice of varieties for home use.

Season of ripening varies widely with locality. Winter apples in the North are fall apples in the South where they also have a tendency to drop before maturity.

Cold or rainy weather during or immediately following blossoming time is a common cause for failure to set fruit, but failure occurs under favorable conditions with some varieties which have proven more or less self-sterile, such as the Wild Goose Plum, McDonald Blackberry, Brighton and Herbert Grapes. The greater number of varieties usually desired for home use increases the chances for good setting of fruit.

# Plan For Home Fruit Garden

The size and shape of plots available varies so widely that no one plan will meet all requirements. However, the following may help in laying out your garden.



Some varieties need more room when full grown than others of same kind. Yellow Transparent, a small upright grower, and Rhode Island Greening, a large spreading tree, represent extremes in apple trees.

## PLANTING DISTANCES

Apple. . . . .	25 to 50 ft. apart	Peach or Plum. . . . .	16 to 20 ft. apart
Apricot. . . . .	16 to 25 ft. apart	Pear, Standard. . . . .	20 to 30 ft. apart
Cherry, Sweet. . . . .	20 to 30 ft. apart	Pear, Dwarf. . . . .	10 to 15 ft. apart
Cherry, Sour. . . . .	16 to 20 ft. apart	Quince. . . . .	10 to 15 ft. apart
Blackberry. . . . .	Plants 2 to 5 ft.	Rows 5 to 7 ft.	
Black Raspberry. . . . .	Plants 3 ft.	Rows 6 ft.	
Red Raspberry. . . . .	Plants 2 to 3 ft.	Rows 5 to 6 ft.	
Currant. . . . .	Plants 4 to 6 ft.	Rows 6 ft.	
Gooseberry. . . . .	Plants 4 to 6 ft.	Rows 6 ft.	
Grape. . . . .	Plants 8 to 10 ft.	Rows 10 ft.	
Strawberry. . . . .	Plants 1 1/2 to 3 ft.	Rows 3 1/2 to 4 ft.	
Asparagus. . . . .	Plants 15 in.	Rows 3 ft.	
Rhubarb. . . . .	Plants 2 ft.	Rows 4 ft.	

## NUMBER OF TREES OR SHRUBS REQUIRED TO SET ONE ACRE

Feet	In.	Feet
1 x 3	8	11,880
2 x 3	8	5,940
2 x 5		4,356
3 x 3		4,840
3 x 6		2,420
3 x 8		1,815
4 x 4		2,722
4 x 6		1,815
5 x 5		1,742
5 x 8		1,089
6 x 6		1,210
6 x 8		907
8 x 8		680
8 x 10		544
10 x 10		435
10 x 12		363
12 x 12		302
12 x 16		226
16 x 16		170
18 x 18		134
20 x 20		108
20 x 30		72
24 x 24		75
25 x 25		69
30 x 30		49
32 x 32		42
34 x 34		37
36 x 36		33
38 x 38		30
40 x 40		27

To determine number of trees per acre for any given distance, multiply distance between trees in row by width of row. Take resulting answer and divide 43,560 by it. For example. To determine number of trees, planted 30x30, required to set one acre.  $30 \times 30 = 900$ .  $43,560 \div 900 = 49$  trees per acre.

## When to Buy

Orders should be placed early. In the propagation of nursery stock, plans have to be made one to three years or more ahead and it is impossible to foretell just what the demand will be for the different kinds and varieties. Moreover, the percentage of salable trees or plants that will be produced from the number planted in the nursery varies from year to year according to conditions over which the nurseryman has no control. The man who orders late runs the risk of not being able to get the varieties or sizes he prefers, and furthermore prices may be higher on some varieties as the season advances.

## How to Buy

You can buy from an agent, a dealer, or direct from the nursery. In any case the price you pay includes a selling cost. A nursery that sells only by mail must meet a selling expense for advertising, catalogs, bulletins, letters, postage, etc.

If you buy from an agent, you should first make him show his credentials. Some have taken advantage of our reputation and claimed to represent us without any authority.

We sell direct-to-customer and also through representatives whom we authorize after careful investigation and to whom we furnish proof of authority to sell for us.

Whichever way a customer chooses, we are back of his purchase. Our capital, equipment, materials, land, etc., are used by a skilled organization with the intention and desire to please the customer.

## Securing Nursery Stock

Generally speaking, "the best is the cheapest," but this applies most emphatically to the purchase of nursery

stock. If one saved a dollar each in the purchase price and got a tree that didn't live or that never could make a profitable tree, he would be out not only the purchase price but also the cost of trying to bring it into bearing.

"To plant a poor tree is to start with a handicap that may continue during the life of the orchard."—Farmers' Bulletin 776 by H. P. Gould, U. S. Pomologist.

Price does not indicate value but a very low price can be made only at some one's expense.

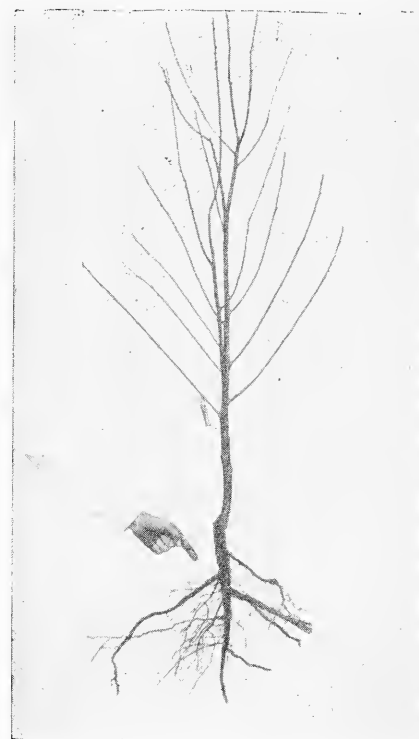
A first-class tree or plant is difficult to describe. It must of course be free from injurious insects and disease; it must have a good root system and top for the age, kind and variety; it must be in good condition and true to name.

Prof. E. J. Wickson of the University of California gives in "California Fruits" a reliable description of a good tree:

*"The trees should have a good healthy look, with a clean bark, and of size enough to indicate a good, free growth. The matter of size is not the only point to consider, for size of the top is not so desirable as well-matured wood and plenty of roots. On the other hand, stunted trees are not, as a rule, worth planting, for a stunted tree, like a stunted calf, often does not make a good aftergrowth. There are cases, however, in which by extra cultivation in good soil fine trees have been grown even from 'culls' from the nursery. The best rule is to select trees of good medium size, straight and healthy. Do not purchase trees unless the roots are healthy-looking and free from knots or excrescences. Gnarly and knotty roots in the young trees are a sure sign of insect pests or of unhealthy growth, and planting such trees has occasioned our orchardists immense loss. Many have*

*been led into purchasing poor trees because they may be had cheap. A tree selected merely because it is cheap may prove to be the most expensive thing a man can put in the ground."*

Varieties, even of the same kind, differ in habits of growth. Some naturally grow better tops or better roots than others. Some kinds, like Crimson Spirea, are naturally small growers. So that what is a first-class tree or plant in one variety or kind would be second-class in another. There are also variations according to where and how stock was grown, when it was dug, how carefully it was sorted or graded and the culls discarded. The average buyer cannot recognize quality in nursery stock. He must rely upon the integrity of the nurseryman. He should know what is back of his purchase.



**One-Year-Old Peach, 11/16-in. up in diameter, measuring about two inches above the bud (the crook in the trunk). The roots have grown two seasons, the top only one. Note the fine root system.**



**A Block of One-Year-Old Peach Trees in Our Nursery.**

## Size and Age to Plant

**Apple.** Growers for profit only, select either one-year or two-year apple. A large number, increasing every season, prefer one-year olds because they stand transplanting better; they can be headed at the height preferred; they are more easily trained to well-shaped tops, with side branches well-spaced and on all sides of the trunk; they cost less; the transportation is less; and they must be good, thrifty specimens to reach salable size in one year. Let us explain here that "one-year" usually refers only to the age of the top. It may be a graft having a root system that has grown only one season in the nursery; or the roots may have grown two years, as is always the case with budded apple, the bud being dormant until the spring after it was inserted in the trunk; or when one-year grafts have the tops cut back to the ground the second year and a new top is grown the second season. Obviously a larger top will be produced in one season from a two or three year old root than from a one-year root.

Two-year apple may have roots that have grown two seasons, or if the tops are cut back early the second spring the roots will be 3 yrs. old when the trees are dug in the nursery.

Experienced growers prefer 3 to 4 ft. or 4 to 5 ft. in apple that have one-year old roots and tops. In older trees they usually select trees with a diameter of  $\frac{9}{16}$  to  $\frac{11}{16}$  of an inch, measuring the trunk about 2 inches above the ground.

**Peach Trees** should never be over one-year old but the roots are always two years old since they are propagated by inserting a bud in a seedling and this bud doesn't grow until the following season. The  $\frac{7}{16}$  to  $\frac{9}{16}$  and  $\frac{9}{16}$  to  $\frac{11}{16}$  are the sizes chiefly in demand, although some commercial growers prefer even smaller sizes.

**Cherry, Plum and Apricot** are also propagated by budding. One-year olds are preferable. Medium sizes,  $\frac{7}{16}$  and  $\frac{9}{16}$ , are very satisfactory.

**Dwarf and Standard Pear** are usually grown two years before being offered for sale, but commercial growers prefer one-year olds.

Our customers report satisfactory results with all the different sizes we offer, from 2 to 3 ft. one-year to two-year apple measuring  $\frac{3}{4}$  of an inch up in diameter. Size of top is not so important as good, clean root systems and good condition.

**Blackberry and Red Raspberry** one-season "suckers" or "root cuttings" are good, although "transplants" are often preferred as likely to bear earlier.

**Blackberry and Dewberry** are offered in one-season "tips" or "transplants."

**Strawberries.** These should always be "one-season" growth "runner" plants.

**Currant and Gooseberry.** Either one-year or two-year olds are satisfactory.

**Grape Vines.** First class one-year olds are the best. They are listed usually as 1 yr. No. 1, 1 yr. No. 2, 2 yr. No. 1, or 2 yr. No. 2, and vary according to the soil in which they were grown, with weather conditions and especially according to the care with which they are sorted or graded. One nurseryman's No. 2 vines might be as good looking specimens as another's No. 1.

## Acclimated Nursery Stock

In other words, "Are trees grown in the orchardist's neighborhood any better than those grown in some other section?" Experience shows that other things being equal it makes no difference where the tree was grown.

NOTE.—Stock from the Neosho Nurseries is giving satisfaction to customers in every state in the Union, in Mexico, England and other foreign countries.



## One-Year Apple Grafts

### One-year roots, one-year tops

These trees were photographed early in October, 1924. Three sizes, 2 to 3 ft., 3 to 4 ft., 4 ft. up.

The Jonathan at the left have a diameter or caliper of  $\frac{3}{16}$ ,  $\frac{5}{16}$  and  $\frac{7}{16}$  up of an inch, respectively, while the Stayman measure  $\frac{5}{16}$ ,  $\frac{7}{16}$  and  $\frac{9}{16}$  up. The difference is due to habits of growth. These trees grew in our nursery one season from grafts planted in the spring of 1924.

Most experienced orchardists prefer one-year trees because: (1) The top can be formed to suit one's preference; (2) Very little of the roots are lost in digging; (3) A larger percentage are likely to live; (4) They are more easily planted; (5) The cost of the trees and of transportation is less.

Prof. C. D. Matthews of the North Carolina Experiment Station says in the American Fruit Grower, October, 1924: "One-year-old trees will come into bearing just as soon as older trees planted at the same time."

We have nearly 600 acres of land ten miles east of Neosho on a plateau more than 1,000 feet above sea level. This soil is particularly adapted to growing apple trees and other nursery stock, and we also have a long growing season. Some nurseries require two seasons to produce sale sized one-year apple, and three seasons to grow two-year trees.



### When to Plant

The best time to plant depends upon many factors: climate, weather and soil conditions, kinds of trees or plants, etc. Fall planting is undesirable in most northern latitudes, particularly of kinds such as peach, plum and cherry, and in soil that is not well drained. It is not always possible for the nurseryman to furnish early enough in the fall, trees that were properly matured before digging.

The arguments for fall planting are: 1st. The planter can then secure the varieties and sizes preferred. The answer to this is, he can just as well place his order in the fall for spring planting. 2nd. Fall planted trees are ready to start growth as soon as spring opens up. On the other hand, there is more or less danger from winter injury during a severe season or from drying out of the trees if the winter is dry, or from alternate freezing and thawing of the ground, especially if the soil is at all heavy. 3rd. There is less work to be done on the farm in the fall. This is true in some instances only.

As a rule local conditions decide when is the best time to plant. Two fine young apple orchards near Neosho, Missouri, one of 1,753, the other of 1,000 trees were planted in February, 1920, but that was a mild month and soil conditions were favorable. In this district apple and cherry can usually be planted to good advantage in the fall, other trees, grape vines, raspberries, blackberries, gooseberries, currants and strawberries in the spring.

Farmers' Bulletin 1001, "Growing Fruit for Home Use," revised November, 1919, which may be had on application to the U. S. Dept. of Agriculture, Washington, D. C., says:

### "Season of Planting

"In the North and wherever the winter conditions are severe on plant life, either from low temperatures, drying



J. H. Hale Peaches the Third Season at Keremeos, B. C. The trees came from Neosho Nurseries.

winds, or other causes, fruits are usually planted in the spring as early as the soil can be put in suitable condition. It is very important that they be set out while the plants are perfectly dormant and before the buds have started. Many failures result from delaying the planting until the buds have started into growth. In middle latitudes and in the South, where winter conditions are favorable, planting in the autumn, after well-matured nursery stock can be obtained, is widely practiced and is usually preferable to spring planting. In some parts of the South planting may be done at almost any time during the winter."

### When We Can Ship

We usually begin digging about October 15th, depending upon condition of the stock and weather conditions and shipments move out from about October 20th up to the middle of May or sometimes later. Peonies should be planted in the fall. These and Iris can be shipped in September.

### How to Prepare the Ground

Land that has been in some cultivated farm or garden crop is usually in the best condition for fruit trees and plants. **Plow deep and work the ground thoroughly.** For fall planting, plow in the late summer. For spring planting, plow in the fall if possible, unless the soil is heavy clay or on a steep hillside that would wash badly.

### Dynamiting

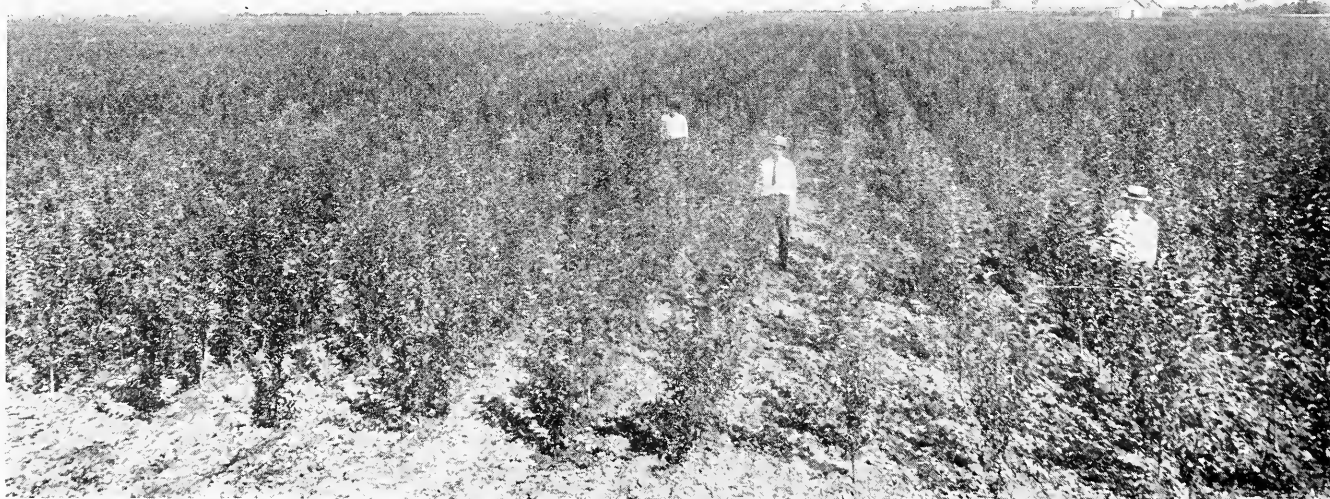
This is often advisable when the subsoil is a stiff clay or contains a great deal of hard gravel. Some even claim an advantage for dynamiting the holes even when the subsoil is not tight.

Half a stick of dynamite is usually sufficient and is placed 3 to 4 feet deep according to the nature and depth of the subsoil. The object is not to blow out a hole, but to break up the subsoil. Dynamiting should never be done when the soil is wet. Make sure there are no pot holes or cavities that may have been formed by the blast. After blasting it is desirable to have at least one rainfall before the trees are set.

Any of the powder companies will supply detailed instructions on application.

### Pedigreed Trees

Variations in size, color or flavor of fruit, in vigor, hardness or productiveness of individual trees of the same variety are produced by the varying conditions under which the tree is grown, such as the nature and quality of the food, quantity of food, climate, care given, etc. It has not been proven that such qualities can be transmitted by budding or grafting.



A Block of Apple Trees in Our Nursery.



### **Handling Trees on Arrival**

Call for your nursery stock promptly on arrival. Examine the shipment carefully and report immediately to the nurseryman if anything seems wrong, in condition, number, size, etc.

If possible plant at once.

If the weather is too cold, put the box or bundle in a cool but frost-proof cellar.

If the weather is warm and you are not ready to plant, unpack at once and place the stock in a cool cellar, covering the roots with damp packing from the box or bundle and spread old sacks or canvas over them. Sprinkle enough water on the trees to keep them from drying out, but do not drench the roots and tops.

If possible heel them in in a place convenient to the orchard or on the orchard site itself, preferably at the north side of a building or woods where they will have protection from the sun and their development will be retarded.

### **Heeling in Trees**

Select a well-drained location. Dig a trench deep enough and wide enough to hold the roots without crowding. This trench or furrow should run east and west so the trees can be leaned toward the south or southwest. Throw the dirt from the trench so as to form a bank. Unpack the trees and place the roots in the bottom of the trench with the tops leaning against the bank. Keep the varieties separate and spread out the trees so the dirt can be filled in about the roots. Fine moist soil should be packed rather firmly about the roots to exclude air. Then heap more soil on the roots and a third or more of the tops. Some growers completely cover the trees. This prevents danger of injury from rabbits and mice, drying out of the tops if the weather turns dry and cold, or swelling of the buds if the weather turns warm. All packing material and grass that might harbor mice should be removed. If the ground is too dry moisten the dirt about the roots. Some growers get their trees in the fall and heel them in over winter so as to be sure to have them on hand when conditions are right for planting in the spring.

### **Treatment for "Dried Out" Trees**

Sometimes trees are somewhat dried out in transit but can be restored by burying them in wet dirt or put in a pond for one to three days. This treatment saves inconvenience and loss to the planter and also the nurseryman. A Neosho orchardist had several bundles of peach trees delivered during his absence which were left without attention in his barn for at least a week. They were then heeled-in, in the garden and a surprisingly large percentage grew.

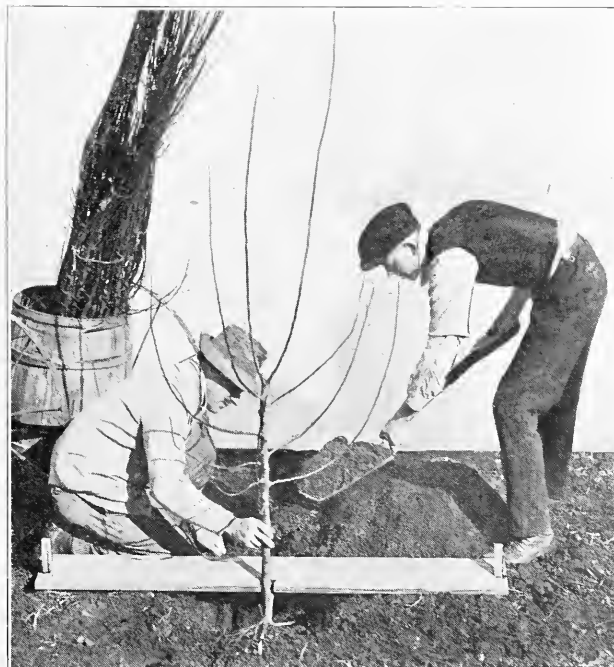
### **Handling the Trees at Planting**

Success is largely a matter of avoiding exposure of roots and tops to the sun or drying winds, and to thorough firming the soil about the roots. As the trees are taken from the bundle or the spot where they are heeled in, the roots and tops should be pruned (delay pruning tops until after planting if preferred) and the tree placed in a barrel or tub about one-fourth full of water. If the weather is hot and the buds swollen, avoid putting water on the buds. Some growers puddle the roots, i. e., dip them in a semi-liquid of soil and water, avoiding heavy clay for this purpose.



**Crown Gall.**

Crown gall is a bacterial disease which some claim will not prevent the tree from coming into profitable bearing. However, the official horticultural inspectors in some states will not let the planter set out such trees. If this disease could be prevented or if it could be proved to be not harmful, it would lower the nurseryman's cost of production, and therefore the price to the planter on first-class trees.



### **Pruning the Roots**

Cut off smoothly, broken, bruised roots and ragged ends above the place of injury. Shorten any roots that are too long. All cuts should be made from the under side.

The large roots serve the purpose of anchorage only. The fibrous roots are useless, new ones must grow out before the tree can feed itself. The soil moisture containing plant food is taken up by the very small root hairs which form on the fibrous roots. In well-grown, thrifty trees, nature has stored up plant food in the plant tissue so that new roots soon develop.

### **Setting the Trees**

Assuming that the ground has been properly prepared, it will not be necessary to dig large holes. 12 to 18 inches square and about the same depth will be large enough for the average size apple tree. That work will be easier if a furrow has been run with the plow. The top soil should be put to one side so that it can be used to fill in about the roots.

The trees are often carried in a barrel or barrels on a cart, wagon or sled. These are about a quarter filled with water to prevent the roots drying out.

In sections where the winds are strong the trees should be leaned toward the prevailing wind. It is a good plan also to place the side with the heaviest roots toward the prevailing wind.

After a tree has been placed in its exact position the roots are spread out and **good top soil** worked under and around them. Moving the tree slightly up and down will help to get the soil under the roots. Then fill the hole half full and **tramp the soil firmly**. After this fill the hole to the top and again **tramp the soil**. Lastly throw a few shovelfuls of loose dirt about the tree to prevent loss of moisture.

It is not advisable to plant when the soil is wet but if you have to plant when the ground is very dry a bucket of water should be poured around the roots after they have been well covered but before the hole is filled. Ordinarily watering is not necessary and might do more harm than good.

Don't put any manure or other fertilizer in the holes in contact with the roots; spread it on the ground around the tree. Straw manure is best.

Wire labels should be removed. Make a plan of the planting, indicating and marking each variety on it.

### ***Pruning the Tops***

Even with a special tree-digger and particular care, part of the roots of trees dug in the nursery are cut off and root pruning is also done before transplanting, so the tops have to be cut back to restore the balance. This is done either just before or after planting. Top pruning induces a stronger growth of what remains and also forces out side branches.

Low heads are desirable to facilitate operations of spraying, pruning and harvesting, to prevent damage to trees and fruit from winds, especially when trees are heavily loaded, and to lessen the danger of sunscald.

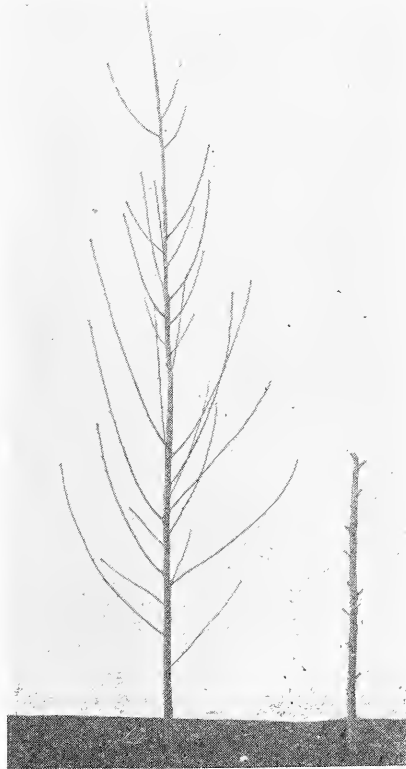
It is also claimed for low heads that less surface is exposed to disease, injury from accidents, etc.; that less energy is required to carry food from roots to tops; that no sap is required for a longer trunk and that the trees are healthier, more vigorous and more productive. Cultivation is comparatively easy with the proper tools. With older trees cultivation near the trunk is unimportant since the feeding roots are further out, extending even beyond the branches. In one peach orchard, the branches extended 9 feet from the trunk and the roots 18 feet.

One year apple trees, without side branches, are cut off just above a sound bud. A low head would be 12 to 24 inches from the ground, a medium head 24 to 40 inches and a high head 40 inches up. Upright growers like Yellow Transparent should be headed lower than varieties that grow large and spreading.

Some varieties of one-year budded apple like Jonathan have side branches unless they have been pruned in the nursery. These and two-year apple should have all but 3 to 5 side branches cut off smooth close to the trunk, the side branches should be cut back about one-half to a sound bud, to an outside bud to make the tree spread, to an inside bud if a more upright shape is desired. These side branches should be on different sides of the tree and some distance apart to prevent bad crotches. One of the top upright branches may be left and cut back according to the preference of the grower for an open head or a modified-leader type.

It is difficult if not impossible to make a low-headed tree out of a two-year apple that has been high headed in the nursery, but one that was headed in the nursery 22 to 24 inches from the ground can readily be trained into a higher head by cutting off the side branches and heading the leader at the desired height.

Pear trees are pruned like apple but usually headed lower, 12 to 15 inches from the ground.



**One-Year Peach Before and After Pruning at Planting Time.**

The larger sizes of peach are well branched.

The usual pruning of peach trees is to cut off all branches and the top. The usual extremes of height run from 12 to 30 inches. Some growers prefer larger sizes well branched and select 3 to 5 branches well distributed about the main stem, cut these back to at least one sound bud and cut off the main stem at the desired height.

Plums and apricots are pruned like peach trees. (See page 31.)

One-year sweet cherry are usually whips which are cut off at desired height. Sour cherry, even one-year, are almost always branched and the general practice is to cut off close to the trunk all but 3 to 5 selected side branches. Some growers, particularly in the North, leave 4 to 6 side branches and they cut these and the leader back to 6 to 9 inches, leaving at least two good buds to each branch and the leader 3 to 4 inches longer than the side branches.

Usually young cherry trees will not require much further pruning except to cut out limbs that cross others or are in positions not desired.

### ***Care of Transplanted Trees***

The first two years is the critical period. It is of vital importance to have them make a good start, for summer drought is likely to prove fatal to trees of low vigor and slow growth. So it is necessary to cultivate thoroughly and systematically to conserve the moisture and aerate the soil. The first summer the soil should be frequently stirred to make a soil mulch and prevent baking and crusting of the surface. The second summer the ground should first be plowed deep, as early in the spring as possible. Cultivation should be stopped about July 15th to August 1st that the trees may have time to mature and harden in preparation for winter.

#### **NOTE—COMMON CAUSES OF FAILURE TO GROW**

1. Planting trees that were dug in the nursery before they became dormant.
2. Drying out from exposure to sun or drying winds, or freezing in the cold before setting out.
3. Crowding the roots into small holes cut in the sod.
4. Failure to firm the soil closely about the roots.
5. Leaving the trees or plants uncultivated.
6. Leaving the tops unpruned.
7. Not planting at the proper depth.
8. Planting in soil too wet or too dry.



# Apples

THE apple, of all tree fruits, is the most generally popular, the most extensively grown, has the greatest number of varieties and is prepared in more different ways for the table. It is a tonic as well as a nutrient, and one of the cheapest and most wholesome foods. There's a lot of truth in the old saying, "An apple a day keeps the doctor away."

Apple trees will grow wherever corn can be raised—in fact, there isn't a state in the Union, with one possible exception, where some variety of apple will not thrive.

No agricultural investment is safer or more productive in profits than a good apple orchard, favorably located and well managed. The last U. S. Census report shows there are about 29,000,000 fewer bearing apple trees than in 1910 and about 36,000,000 less not-of-bearing age.

Every home garden and farm should have at least a few apple trees of summer, fall and winter varieties. They will give satisfaction far beyond the time, labor and money required.

This condensed table may help to choose an assortment that will give you apples the year round if you have a good cellar.

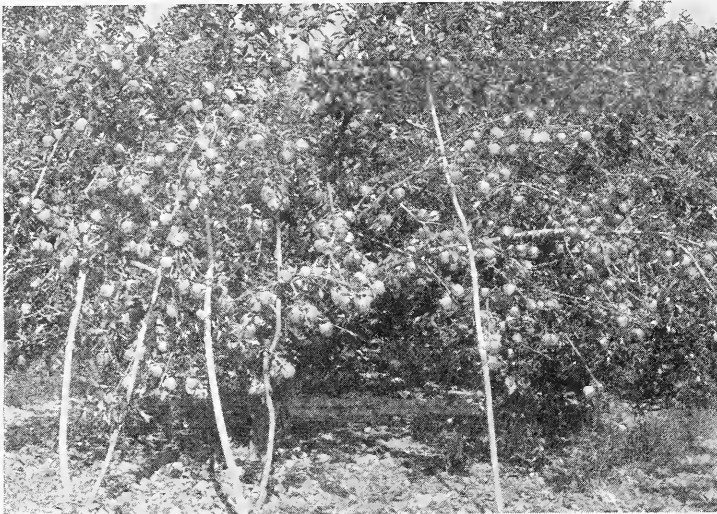
Most summer and fall varieties ripen over a period of several weeks and many are good for cooking before ripe. Winter varieties are picked when mature but before they are ripe enough to eat. Maturity can be told by the changing from a hard dead green color to warmer reds and yellows, by the seeds turning brown and by the readiness with which the stem separates from the twig.

Varieties marked \* are adapted only to a northern climate.

Under "USE," C means for cooking; D for dessert.

VARIETIES	COLOR	SIZE	QUALITY	USE	KEEPS IN COMMON STORAGE
<b>Early Summer:</b>					
Liveland Raspberry.....	Red Striped	Medium	Good	C. D.	2 Weeks
Yellow Transparent.....	Yellow	Medium	Good	C. D.	2 Weeks
<b>Midsummer:</b>					
Red Astrachan.....	Red Striped	Medium to Large	Good to Very Good	C. D.	3 Weeks
Duchess of Oldenburg.....	Red Striped	Medium	Good to Very Good	C.	2 Weeks
Wilson Red June.....	Deep Crimson	Medium to Large	Very Good	D. C.	3 Weeks
Sweet Bough.....	Greenish-Yellow	Medium	Good to Very Good	C. D.	2 Weeks
Early Harvest.....	Pale Yellow	Medium	Good to Very Good	C. D.	1 Week
<b>Late Summer:</b>					
Maiden Blush.....	Yellow-Red Blush	Medium	Good	C. D.	7 Weeks
Ada Red.....	Purplish-Red	Medium	Very Good	D. C.	3 Weeks
Wealthy.....	Red Striped	Medium to Large	Good to Very Good	D. C.	5 Weeks
<b>Fall:</b>					
McIntosh*.....	Bright Red	Medium to Large	Very Good to Best	D.	9 Weeks
Grimes Golden.....	Golden Yellow	Medium to Large	Best	D. C.	10 Weeks
King David.....	Dark Red	Medium	Good	D. C.	12 Weeks
Wagener*.....	Red and Yellow	Medium to Large	Very Good to Best	D. C.	8 Weeks
Jonathan.....	Bright Red	Medium to Large	Best	D. C.	12 Weeks
<b>Winter:</b>					
R. I. Greening*.....	Green and Yellow	Large	Very Good	D. C.	12 Weeks
Delicious.....	Red Striped	Large	Best	D.	10 Weeks
Winter Banana.....	Yellow and Red	Medium to Large	Good to Very Good	D.	10 Weeks
Spitzenburg*.....	Yellow and Red	Medium to Large	Best	D. C.	12 Weeks
Black Ben.....	Bright Red	Medium to Large	Fair	C.	14 Weeks
Rome Beauty.....	Red Striped	Medium to Large	Good	D. C.	14 Weeks
Baldwin*.....	Bright Red	Medium to Large	Good	D. C.	14 Weeks
Northern Spy*.....	Red Striped	Large	Best	D. C.	14 Weeks
Winesap.....	Dark Red	Medium	Good to Very Good	D. C.	14 Weeks
Stayman.....	Red Striped	Large	Good to Very Good	D. C.	14 Weeks
Senator (Oliver).....	Dark Red	Large	Good		12 Weeks
Mammoth Black Twig.....	Dark Red	Large	Good	D. C.	16 Weeks
Paragon.....	Dark Red	Medium to Large	Good to Very Good	D. C.	16 Weeks
York Imperial.....	Red Striped	Large	Good to Very Good	D. C.	16 Weeks
Minkler.....	Light Red	Medium to Large	Fairly Good	D. C.	16 Weeks
Willow Twig.....	Green and Red	Medium to Large	Fair to Good	C. D.	16 Weeks
Champion (Collins Red).....	Bright Red and Yellow	Medium	Fair	C. D.	16 Weeks
Yellow Newtown.....	Yellow	Medium to Large	Best	D. C.	18 Weeks
<b>Crabapples:</b>					
Florence†.....	Red Over Yellow	Medium	Good	C.	2 Weeks
Excelsior†.....	Red and Yellow	Very Large	Good to Very Good	C. D.	2 Weeks
Hyslop†.....	Red Over Yellow	Medium to Large	Good	C.	6 Weeks

†These varieties ripen about two weeks apart.



**Delicious apple tree showing wonderful productiveness. This Washington orchard began bearing the third year and when nine years old averaged five barrels per tree. They sold for \$6.00 to \$7.50 per barrel.**

**ADA RED (Late Summer)**—Originated in Northwest Arkansas where the only two orchards now in bearing are located and is harvested about August 15. It has not been tested in other districts to our knowledge. It is a particularly early bearer. The fruit is medium size, roundish; yellow, nearly covered with red and broken stripes of purplish crimson; flesh whitish; flavor mild subacid; quality good; good for dessert, excellent for cooking.

**ALBEMARLE PIPPIN**—(See Yellow Newtown.)

**BALDWIN (Winter)**—The Baldwin is the leading variety in the commercial orchards of New York, New England, and certain parts of Canada; also in Michigan and Northern Ohio. In the South and Southwest it is not desirable, because it ripens too early, and drops from the trees before its good qualities are developed. It does fairly well in the Pacific Northwest, but cannot be grown in competition with the Northeastern States. The tree is a strong grower, long-lived, and vigorous. It is somewhat slow in reaching maturity, but usually begins to bear abundantly about the seventh year. Fruit large to very large, uniform in size; form, roundish to conical; skin is tough and smooth, blushed and mottled with bright red; flesh yellow, firm, moderately coarse, crisp, tender, juicy, agreeably subacid, good quality.

**BLACK BEN (Winter)**—The best of the Ben Davis family. It attains a much higher color than the Ben Davis or Gano. The tree is hardier, more vigorous, and more prolific than the Ben Davis. Bears about the sixth year; fruit is large, solid dark red; flesh is white, firm, juicier than Ben Davis, mild subacid, fair quality. It is pre-eminently successful in Virginia, Kentucky, Tennessee, Illinois, Missouri, Arkansas, and portions of adjoining states.

**CHAMPION (Collins Red) (Winter)**—Tree hardy, very heavy, regular and early bearer. Fruit medium in size, roundish; attractive deep red striped with purplish carmine, but when not fully colored is yellow striped with red; picking season, Southwest Missouri, mid-October. Comparatively low quality but good for such a late keeper. Cold storage limit May or June. Sells well on Southern markets.

**DELICIOUS (Winter)**—Who is not familiar with this justly popular apple? Who does not appreciate its unexcelled flavor, its beauty of form and color, its fragrant aroma? It is mild in flavor, crisp and juicy, the best in quality. It is large in size and the five knobs at the blossom end are a distinctive characteristic. In color it varies with climate, soil and management; more or less striped with dark red, often a dark crimson. It finds a ready sale at high prices. The tree is vigorous, hardy and is fruiting in nearly every state.



**The Incomparable Delicious.**

**DUCHESS OF OLDENBURG (Midsummer)**—Attractive yellow apple, almost covered with red stripes; medium size. One of the most profitable summer varieties. The flesh is tender, juicy, subacid; very good for culinary purposes even before fully ripe. Tree is a moderate grower; can be planted close and is often used as a filler. Comes into bearing young, often fourth year. Bears heavy crops annually; great market apple and especially good cooker. Ripens in succession, requiring several pickings. Extremely hardy.

**EARLY HARVEST (Midsummer)**—A pale yellow, medium sized apple of very good quality for either dessert or cooking. The tree is a fairly good grower, medium sized and comes into bearing young. Widely grown for home use.

**GRIMES GOLDEN (Fall)**—The standard of excellence, the best quality, profitable yellow apple; rich golden color, often showing a pinkish blush. Flesh is yellow, very firm, crisp but tender, rich, aromatic and juicy; very good to best quality; medium to large; an ideal dessert apple and a splendid cooker. Tree is a hardy, vigorous, upright, spreading grower and heavy regular cropper. Bears about the fourth year. The highest quality yellow apple and one of the best for home use and commercial planting. It is a leading commercial variety in Missouri, Arkansas and is successfully grown in many other middle latitude states.

*(See Triple-Life Grimes Golden on next page.)*





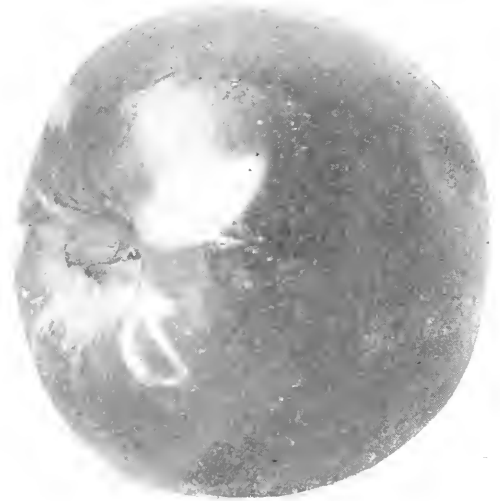
Triple-Life Grimes Golden.

**TRIPLE-LIFE GRIMES GOLDEN**—There are orchards of this variety 15 years old which are dying out on account of collar-rot which attacks the tree near the ground. They will live and retain their usefulness three times as long if the Grimes part is grown on a vigorous variety like Mammoth Black Twig which is not subject to collar-rot.

We plant a graft of Mammoth Black Twig in the spring, insert the Grimes bud 18 to 20 inches above the ground. Such a tree is shown in the picture above. The Grimes bud, as indicated by the hand, is dormant until the following spring when the top is cut off just above that bud. In the fall the tree is ready to dig. The roots and the Mammoth Black Twig trunk have

grown two seasons and the Grimes part only one season. Yet with us the Grimes part is well branched and would be taken for a two-year-old by the average planter.

**JONATHAN (Fall)**—A grand, good apple; once tasted, always wanted. Bright solid red, deep red on the sunny side. Flesh whitish, sometimes tinged with red. Firm, fine, very crisp and tender. It has an aromatic flavor and juice which is full of snap and sparkle. Medium size; very good to best quality. Tree is moderately vigorous, long-lived, an upright grower. Bears about fourth year. Produces good crops regularly. Fine for home and commercial planting.



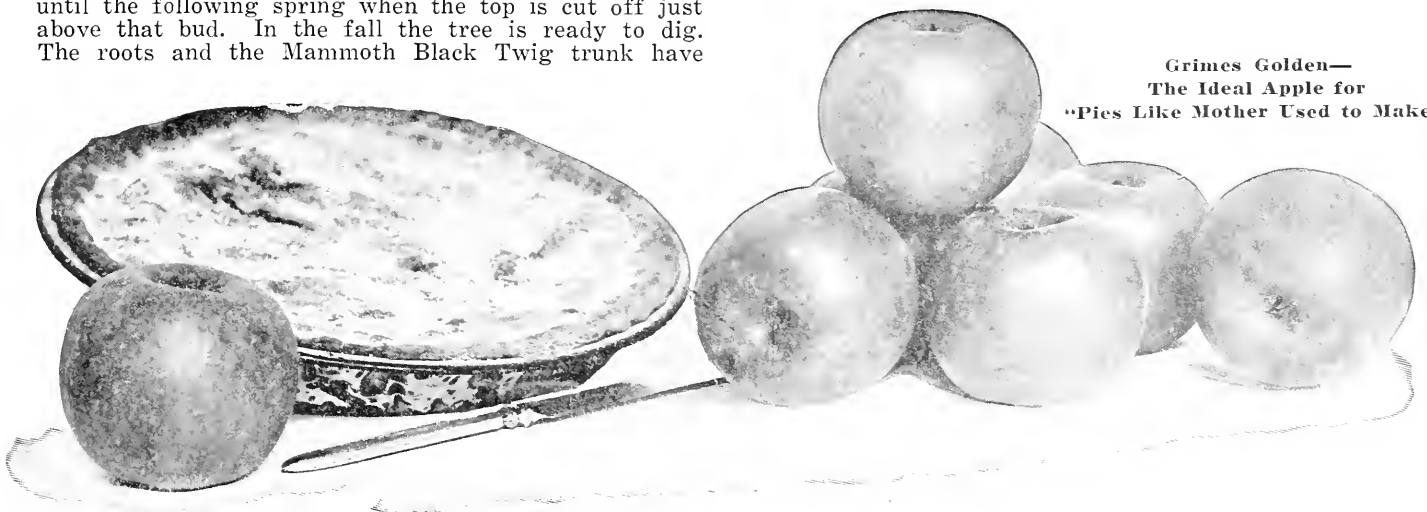
Jonathan—Best Quality Commercial Apple of Its Season.

**KING DAVID (Fall)**—Enormously productive, bearing heavy crops year after year. Uniform shape, tapering toward the blossom end. Medium size; very dark rich garnet red, showing almost a purplish-black on the sunny side. Similar to Jonathan but more tart. Tree is a hardy, vigorous grower, comes into bearing about the fourth year. Sometimes used as a filler.

**LIVLAND RASPBERRY (Early Summer)**—Beautiful red and yellow apple. Medium size; flesh is snow-white, tender, fine-grained, crisp and juicy. Very good. Tree is a strong, vigorous grower. Bears fourth to sixth year.

**MAMMOTH BLACK TWIG**—(The correct name is Arkansas. Often confused with Paragon.) A large apple of good quality; a dull green or deep yellow overspread with red; good quality; excellent keeper. Formerly quite extensively planted in middle South and Southwest, but not at present, because it is often a shy bearer. The tree is one of the best, making a fine, vigorous, spreading growth.

Grimes Golden—  
The Ideal Apple for  
"Pies Like Mother Used to Make."





This picture, taken October 23, 1924, shows one of a thousand one-year Neosho Nurseries Apple Trees planted in the spring of 1920. Mr. A. N. Walker of Neosho, standing by this tree, is about 6 ft. 4 in. tall. No wonder he is proud of his orchard.

**PARAGON WINESAP (Winter)**—Paragon has the large size and very good quality of the Stayman combined with the dark red color of the old Winesap. The true Paragon was introduced and named by Dr. W. L. Moores of Lincoln County, Tennessee, and has been largely planted under name of Mammoth Black Twig, giving the latter an undeserved reputation. Tree is equal in every respect to Winesap; a more vigorous, open grower. Bears sixth to seventh year, and thrives wherever Winesap can be grown.

**RED ASTRACHAN (Midsummer)**—A general-purpose apple for home use and local market. Nearly covered with light and dark red stripes, overspread with bloom like a plum; large, roundish; white flesh tinged with red; flavor aromatic, brisk, subacid; very good. Good for eating fresh out of hand when fully ripe; an ideal cooker. Tree is hardy, of the Russian type, moderately vigorous, upright, spreading; adapted to every state where apples grow. Bears fourth year.

**MAIDEN BLUSH (Late Summer)**—Striking, highly colored, yellow apple, with a deep crimson blush on one cheek. Round, flat, medium size; flesh white, crisp, tender, very juicy; a good eating and excellent cooking apple. Tree is vigorous, spreading, and open. Usually bears fourth to fifth year.

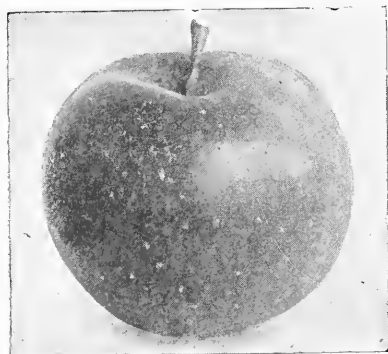
**McINTOSH (Fall)**—One of the best early winter apples for northeastern states; noted for its high quality and delightful fragrance. Medium to large size, roundish, slightly flattened at the stem end. Beautiful deep crimson, striped with carmine and overspread with a heavy blue bloom. Crisp, snow-white flesh; is very tender and juicy, entirely different from "meaty" apples like Spitzenburg and York. Makes a strong appeal to people who pay high prices for fancy fruit. Tree is long-lived, a strong, vigorous grower, with an open, spreading head, and very hardy. Bears fourth to fifth year. One of the best apples of its season, both for home planting and to supply not-too-distant markets.

**MINKLER (Winter)**—A light red attractive apple of good size and fairly good quality, mild subacid. Keeps exceptionally well in common storage. Widely distributed in the Ozarks of Missouri and Arkansas, but not planted extensively. The tree grows large and very vigorous, a regular but light producer.

**NORTHERN SPY (Winter)**—Attractive, red-striped winter apple; large, roundish and plump, tapering slightly toward the blossom end. Flesh is firm, fine-grained, crisp, rich, subacid, very fine quality. It appeals to those who like a brisk, spicy apple that is not actually sour. Tree is a vigorous and unusually healthy grower. Bears seventh to twelfth year. An old-time favorite in the North and Northwest.

**RHODE ISLAND GREENING (Winter)**—A large, roundish, green winter apple, yellow when fully ripe. Tender and full of sparkling juice, with rich flavor surpassed by few apples. One of the best dessert apples and an excellent cooker. Tree is a large, vigorous grower, with wide spreading branches, drooping and dense, usually late in coming into bearing. A North and Northeastern variety.

**ROME BEAUTY (Winter)**—Large, roundish, oblong apple, handsomely colored and striped with bright red; one of the most beautiful and profitable late winter apples. Flesh is firm, crisp, juicy and of good quality. Splendid storage apple. Tree is a vigorous, upright spreading grower; hardy, except along the Canadian border. Very profitable in the central United States, Rocky Mountain country, and some Southern states; a splendid bearer, blooms late. Bears fourth to fifth year.



**Rome Beauty—a Profit Maker.**



**King David—a Fine "Filler" Apple.**



**Wealthy—Hardy—High Quality—Bears Young.**



**SENATOR (Oliver—Red) (Winter)**—A medium to large, attractive, roundish apple of good to very good dessert quality. Under color yellow, washed over nearly entire surface with bright red and with numerous gray or russet dots. A fall apple in the Ozarks of Missouri usually picked early in September.

**SPITZENBURG—(Esopus Spitzenburg) (Winter)**—Large, handsomely colored, bright purplish-red, shaded with yellow and striped with darker red; flesh firm, tinged with yellow; moderately juicy, spicy, very best quality. Tree is moderately vigorous, spreading; a rather moderate cropper. Thrives in favored Northern localities, particularly in the Northwest. Should be planted in deep, fertile, well-drained soil. Bears about the seventh year.

**STAYMAN WINESAP (Winter)**—The largest of the Winesap family. Striped and splashed with dark crimson, resembling Winesap, except that the color is not quite so brilliant; flesh tinged with yellow, firm, crisp, sprightly pleasant, with a rich subacidity that appeals to everyone. Splendid quality. Tree has a dark, heavy foliage, closely resembling its parent, the Winesap; thrives on thin dry soil where Winesap would fail. Reliable annual cropper; bears the fourth to fifth year. It does best in middle latitudes.

**SWEET BOUGH (Midsummer)**—A sweet apple, juicy, good to very good for dessert, excellent for cooking. Begins to ripen about the first week in July. Color is a greenish yellow changing to yellowish white.

**WAGENER (Fall)**—Bright red apple, strongly contrasting yellow background color; medium to large; whitish flesh, tinged light yellow, firm, fine-grained, juicy, very good quality. Tree is straight, vigorous, upright grower; enormously productive, usually bears third to fourth year. Often used as a filler. A Northern variety.

**WEALTHY (Late Summer)**—A most dependable and widely planted late summer apple; bright red striped; medium to large size; white crisp flesh tinged with red; good for cooking before it ripens. Ripens over a long season. Very good quality. Tree is an upright grower; often used as a filler; very hardy; bears fourth or fifth year. Adapted to many soils and climates, but especially suited for Northern planting where extreme hardiness is required. Good shipper; especially recommended for home use and commercial planting.

**WILLOW TWIG (Winter)**—Medium to large yellowish green, washed and striped with dull red; flesh yellowish, mild subacid; good quality; a good, long keeper. Tree strong grower, spreading, with drooping willowy branches. Rather early and regular bearer. A semi-Southern variety.

October 23, 1924.

"The trees I bought of you to plant the 40-acre orchard were fine and I never had trees that made a better growth. I consider your grading of trees to be extra good. Thanking you for your good treatment in all our dealings."—H. G. Richardson.



**Wilson June—Most Beautiful of its Season, Good Shipper.**

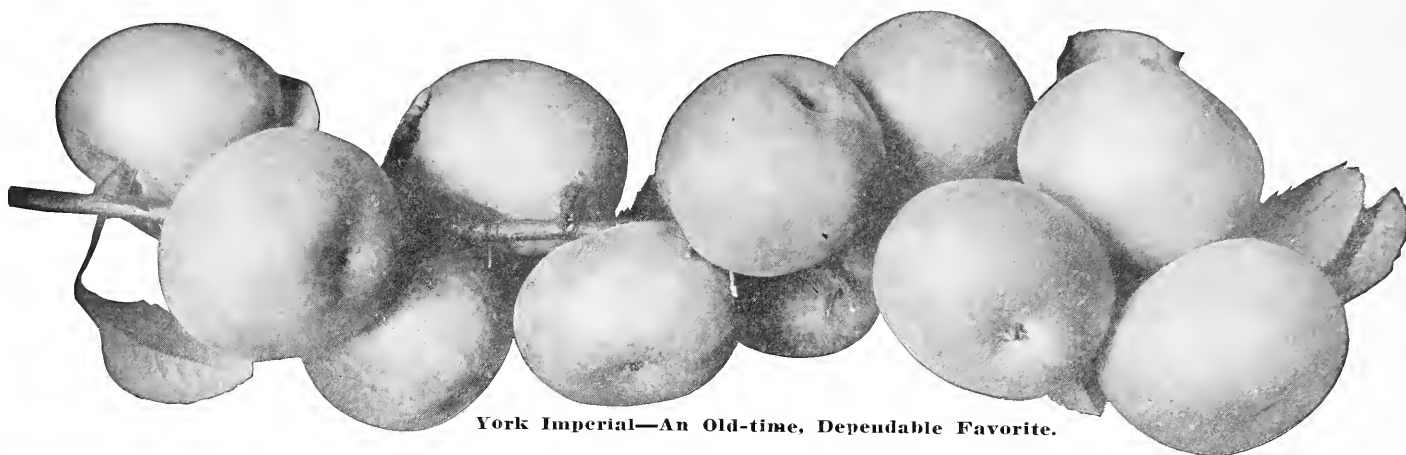
**WILSON JUNE (Midsummer)**—A deep, solid crimson, like a Red June; large; firm white flesh; good quality. Tree makes a moderately strong growth, is hardy, vigorous, very productive, bears young. Most beautiful of its season; good shipper.

**WINESAP (Winter)**—One of the oldest and most popular apples, a good shipper and an exceptionally good keeper in ordinary and cold storage. Well-grown Winesaps command a premium over most other winter apples with commercial buyers. Splendid bright red, indistinctly striped with dark purplish-red. Flesh is tinged with yellow; very firm, juicy, very good quality. Medium size; a favorite with everyone. Tree is a vigorous, spreading, open grower. Hardy, adapted to planting in every part of the country, except in the extreme Northern states. Will succeed on many different kinds of soils, preferring a deep loam. It is a heavy, regular bearer. Produces the first crop about the fifth year.

**WINTER BANANA (Winter)**—Very showy, bright yellow, with a pinkish-red cheek; noted for its brilliant, transparent, waxen appearance; medium size; good quality, with a rich, spicy flavor. Tree is a good average grower, adapted to many conditions; flat, spreading top; hardy, except in extreme North; regular cropper; bears about the fifth year.



This picture, taken October 23, 1924, is the 40-acre orchard of H. G. Richardson, whose letter is quoted above. These trees were one year old when planted in February, 1920, and were purchased from the Neosho Nurseries, excepting Missouri Pippins used as fillers.

**York Imperial—An Old-time, Dependable Favorite.**

A good root system is essential. The top is, or should be, cut back  $\frac{1}{2}$  to  $\frac{3}{4}$  when planted. All the top could be cut off and still grow a good tree if the roots are good and full of vitality.

**YELLOW NEWTOWN (Albermarle Pippin) (Winter)**—Medium to large; a beautiful yellow; flesh very firm, meaty, brittle, juicy; highest quality for dessert and excellent for culinary purposes. Tree is a good grower, but must have fertile soil and good air drainage. Hardy; bears the fifth year. It is firm, keeps very late and ships well. The crop is mostly exported, having a long established reputation in Europe where it commands the best prices for American apples. Grown chiefly in California, Oregon, Washington and Virginia.

**YELLOW TRANSPARENT (Early Summer)**—One of the best extra early apples; extremely hardy; a beautiful clear yellow, with smooth waxen, brilliant skin, which gives it a transparent appearance. Fine-grained white flesh, sprightly, subacid, pleasant. Unexcelled for pies, tarts and apple sauce. Medium size. Tree is a moderately vigorous, straight, upright and compact grower; often used as a filler; usually bears third to fourth year. A reliable cropper. Fruit ripens over a period of three weeks and requires several pickings. Profitable for near-by markets. Excellent for home planting.

It is adapted to all apple soils and climates. One of the best apples for the South, and is very extensively planted in the North because of its unusual hardiness. It will sometimes blight like the pear if planted on soil that is too rich and the growth forced too much by fertilization. Succeeds on thin soils.

**YORK IMPERIAL (Winter)**—Bright, pinkish-red, striped with dark-red; firm, crisp, meaty flesh, brittle, a little coarse, but juicy and fair quality. Large; its oblique or lopsided shape is a notable characteristic. The tree is of ideal shape, a very strong, vigorous grower and enormously productive; widely planted in the middle Atlantic States and Central West. A very regular bearer, beginning about the seventh year; seldom fails.

## Crabapples

**C**RABAPPLES should be planted for beauty of tree and fruit, as windbreaks, and for the value of the fruit. They are delicious for cooking, preserving and jellies. Excelsior is delicious for eating fresh.

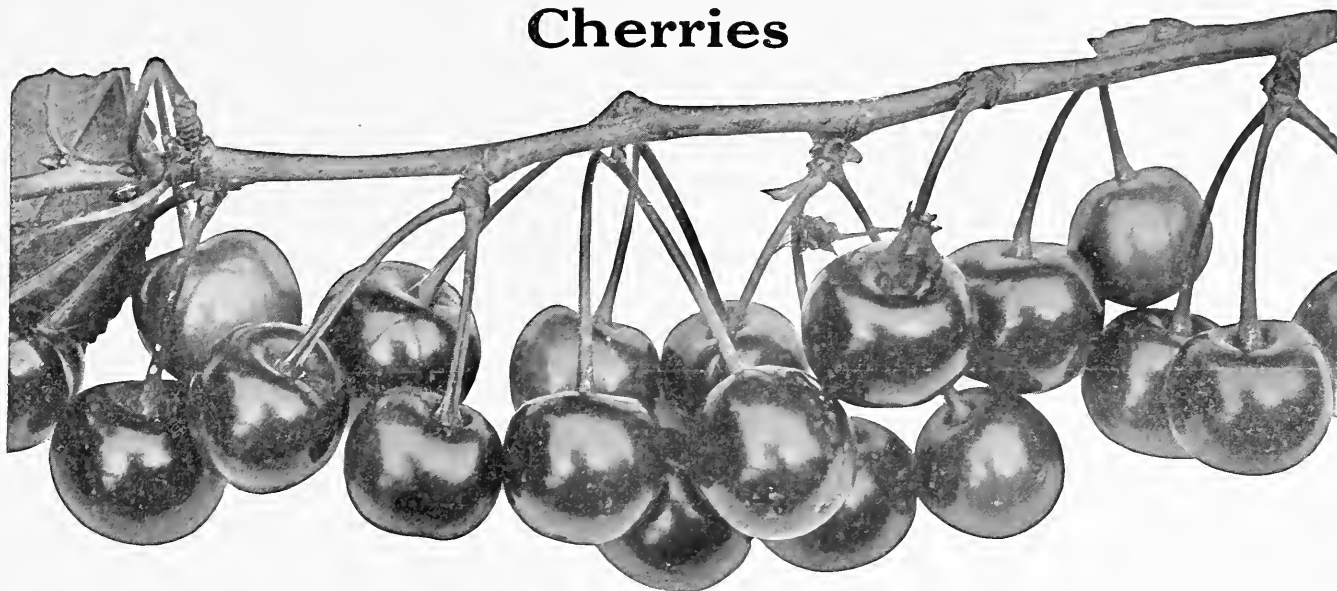
**EXCELSIOR (Fall)**—Very large for a crabapple, nearly as large as a medium sized apple. Very attractive yellow almost covered with bright red. Flesh is white, juicy, subacid, excellent in quality for dessert and for culinary uses. Tree is good, strong grower; hardy, healthy; comes into bearing rather young, and bears good crops alternate years.

**FLORENCE (Late Summer)**—Medium size, yellowish-white, mostly overspread with brilliant pinkish red. Flesh tinged with yellow, juicy, quite subacid, somewhat astringent. Tree is moderately vigorous; at first upright spreading but eventually inclined to droop. Bears very young, is very productive, reliable cropper and the fruit is of good size, very attractive and good quality.

**HYSLOP (Early Winter)**—Large, very brilliantly colored, dark red or purplish, overspread with thick blue bloom. Tree is a good grower, very hardy, reliable bearer, usually biennially. Flesh yellow, subacid, astringent; good for culinary purposes.

**Excelsior—Largest and Best Crab for Eating Fresh.**

## Cherries



**Y**OU may buy cherries fresh or canned; but if you ever tasted any fresh and ripe from the tree, you will surely want a few trees of your own. Possibly you cannot grow sweet cherries, since they thrive only in favored localities, preferring a sunny, equable climate and a deep, dry, gravelly or sandy loam; they also require particular attention and care, especially in spraying. But the sour cherry can be grown almost anywhere. It is notably hardy and quite adaptable to different soils and climates, preferring a moderately heavy loam. The soil must be well drained. It does better under neglect than any other tree fruit. The three leaders—Early Richmond, Montmorency and English Morello—ripen over a season of nearly forty-five days.

The sour cherry makes a fine ornamental windbreak, gives great satisfaction in the home garden and offers great possibilities for profit for the grower who supplies local markets.

### *Sour Cherries*

**EARLY RICHMOND (Sour)**—The favorite early sour cherry, and next to the Montmorency the most popular of all cherries. Fruit is medium size, roundish shape, flattened at the end; flesh light color, tender, and sprightly. A good canner, but not so firm as Montmorency. Tree is medium size, vigorous, upright, spreading, productive and long-lived. Ripens about a week earlier than Montmorency.

**MONTMORENCY (Sour)**—The most widely and most numerous planted cherry. It is the most productive and regular bearer. Colors early before ripe—a distinct advantage for shipping. The fruit is roundish, plump, flattened at the end, and a beautiful glowing red. It hangs in clusters, making picking easy.

The fruit does not crack or rot even in very hot, rainy weather. It hangs on without dropping after it is dead ripe. The flesh is rich, sprightly, and pleasant; flesh is reddish color, tender, and melting, but firm. A good shipper and a good canner. Does not mash down in the box.

The tree is the largest, most vigorous grower of all the sour cherries. Round, spreading, upright head, especially hardy and productive; a very reliable cropper. Bloom is hardy and seldom injured by late frost or severe winter freezes. The Montmorency can be grown in practically every part of the country except the low lands of the extreme South. Adapted to great variety of soil and climate and succeeds well under adverse conditions. Ripens in Southwest Missouri first week in June.

**ENGLISH MORELLO (Sour)**—Fruit is small, dark red colored, very sour, but loses much of its sourness if left on the tree until fully ripe. First-class for canning and preserving. Stands lower temperature and severer drouth than any of the other leading varieties. Tree is small, round-headed with drooping branches. Bears young. Very productive and hardy but not as healthy nor adapted to many different kinds of soil as Montmorency or Early Richmond. Especially good for gardens where a small-growing tree is desired.

### *Sweet Cherries*

A sweet cherry planted alone is not likely to bear fruit because it is self-sterile. Plant a Black Tartarian with any other sweet cherry.

**BING (Sweet)**—Very dark red, almost black; very large; very good quality; ripening midseason; blooms early.

**BLACK TARTARIAN (Sweet)**—Most widely planted sweet cherry east of the Mississippi. Beautiful, lustrous, purplish-black when ripe. Medium size for sweet cherry. Flesh purplish-red, firm, tender, pleasant flavor, sweet and mild; very good quality. The tree is a very large, vigorous, upright grower; adapts itself to widely different soils and climates. Very productive and regular bearer. Comparatively free from brown rot. Early.

**GOV. WOOD (Sweet)**—Yellowish-white tinted with crimson; large; very good quality; ripening early, with Black Tartarian; blooms early.

**NAPOLEON (Sweet)**—The best yellow cherry. Often sold and grown as Royal Ann. Best of the sweets for dessert and canning. Very particular as to soil and climate. Apt to crack in wet weather, and somewhat susceptible to brown rot. Nevertheless, it deserves first place among sweet cherries for home and commercial planting. It is an attractive yellow, with a bright red cheek; very large; long, heart-shaped; firm flesh. Meaty, crisp, mild and sweet; high quality. Tree is a hardy, vigorous, upright grower, with strong, sturdy limbs. Very productive and bears young.

**WINDSOR (Sweet)**—Dark red, almost black; large; good to very good quality, ripening late; blooms early; very hardy; upright grower.

## Peaches

**F**RESH, ripe, home-grown peaches over a season of nearly three months are a most delicious fruit that may be had at little expense. You can never know how good peaches taste until you pick them fully ripened from your trees. They can be grown almost as far north as apples and will succeed farther south. They will do well on a wide range of soil types, even moderately heavy clay loams and clay, but the soil must be well drained. The soil should be moderately fertile. Peaches will not do well on hard impervious clay nor on very alkali soils. Plant largely of midseason and late varieties, but include enough of the earlier and very late kinds to provide an ample supply throughout the season.

PEACH TABLE					RIPENING DATES OF ELBERTA	
Varieties in Seasons	Flesh	Size	Quality	Days Ahead of Elberta		
<b>Very Early:</b> Mayflower .....	White—Semi-cling	Medium	Fair	50	Conn. ....	Middlesex and New Haven Counties. .... Sept. 5-15
<b>Early:</b> Greensboro* .....	White—Semi-free	Medium	Fair	40	N. Y. ....	South. .... Sept. 1-10
Arp (Beauty) .....	Yellow—Semi-cling	Medium	Good	38	N. Y. ....	West. .... Sept. 10-25
Erose (Early Rose) .....	Red and White—Cling	Medium	Very Good	35	N. J. ....	S. W. Central. .... August 20-25
Eureka .....	White—Free	Large	Good	30	N. J. ....	East Central. .... Aug. 25-Sept. 10
Carman* .....	White—Semi-free	Large	Good	24	Ohio .....	South. .... Aug. 10-Sept. 1
<b>Midseason:</b> Alton .....	White—Semi-free	Large	Good	18	Ohio .....	North. .... Aug. 25-Sept. 25
Hiley .....	White—Free	Large	Good	15	Indiana .....	South. .... August 25-30
Champion* .....	White—Free	Medium	Very Good	15	Indiana .....	Central. .... September 15
Illinois .....	White—Free	Large	Very Good	15	Illinois .....	South. .... August 10
Belle (of Georgia)* .....	White—Free	Large	Very Good	8	Illinois .....	East Central. .... August 25-30
J. H. Hale .....	Yellow—Free	Very Largest	Very Good	5	Illinois .....	West Central. .... September 1-15
Early Elberta .....	Yellow—Free	Very Large	Good	3	Mich. ....	Southwest. .... September 5-15
Elberta Cling .....	Yellow—Cling	Very Large	Good	2	Pa. ....	Southeast. .... Aug. 15-Sept. 15
Elberta .....	Yellow—Free	Very Large	Good	Days After Elberta	Md. ....	East. .... July 30-Aug. 10
<b>Late:</b> Crosby** .....	Yellow—Free	Medium	Very Good	5	Md. ....	West. .... August 10-20
Late Crawford .....	Yellow—Free	Very Large	Very Good	8	W. Va. ....	Northeast. .... Aug. 20-Sept. 5
<b>Very Late:</b> Krummel .....	Yellow—Free	Large	Good	30	N. Car. ....	Central. .... July 20
Heath Cling* .....	White—Cling	Large	Good	40	Georgia .....	Central. .... July 1-10
*Hardest varieties.					Ky. ....	North Central. .... August 10-15
					Ala. ....	Southwest. .... July 1
					Tenn. ....	Southeast. .... July 25
					Ark. ....	Southwest. .... July 10
					Missouri .....	Oregon County. .... July 28-Aug. 8
					Missouri .....	Howell County. .... August 10-15
					Kansas .....	Northeast. .... Aug. 20-Sept. 10
					Okla. ....	Central. .... Aug. 1-20
					Texas .....	Northeast. .... July 4-15
					Idaho .....	Canyon County. .... Aug. 28-Sept. 12
					Colo. ....	Mesa County. .... September 1
					N. Mex. ....	Southeast. .... August 1-15
					Wash. ....	South Central. .... August 15-20
					Oregon .....	Northeast. .... August 25-30
					Cal. ....	Solano County. .... July 24-Aug. 8
					Cal. ....	Amador, Eldorado, Placer Counties. .... Aug. 4-Sept. 4

**ALTON (White Semi-Freestone) (Midseason)**—A large, handsome white-fleshed peach of good quality. Tree is hardy and productive. Blooms early. Grown mostly in Middle West and South.

**ARP BEAUTY (Yellow Semi-Clingstone) (Early)**—The earliest good yellow peach. Round-oval in shape, heavily blushed with red, excellent quality. Deserves a place in every home orchard. Tree is vigorous, productive, hardier in bud than the average.

**BELLE OF GEORGIA (White Freestone) (Midseason)**—An unusually handsome large peach. Creamy-white blushed with red, good quality, better than Elberta. Tree is large, open headed, hardy. Prefers a Southern or semi-Southern climate.



Orchard of Peach Trees from Neosho Nurseries at Osceola, Ark., planted November, 1921; photographed fall, 1922.

**CARMAN (White Semi-Freestone) (Early)**—A very general favorite in nearly every peach section as it succeeds in a great variety of soils and withstands trying climates. Tree is an excellent grower, bears abundantly, remarkably hardy in wood and bud. Fruit is brilliant red, splashed with darker red on creamy-white background; good quality for its season.

**CHAMPION (White Freestone) (Midseason)**—An exceptionally high quality, attractive, hardy white peach. It has a peculiar honeyed sweetness. It is not a good shipper but the tree is almost perfect in every respect on good peach soils. Ideal for home use and local markets.

**CROSBY (Yellow Freestone) (Late)**—Most notable for hardness of tree and bud. Tree is rather small grower but unusually vigorous, healthy and productive. Fruit is medium size, not attractive, but very delicious for dessert or culinary use.

**EARLY ELBERTA (Yellow Freestone) (Midseason)**—Very large, high quality, lemon-yellow peach; originated in Utah. Flesh is fine grained, sweet; for home use and local market. Tree is a strong grower of Elberta type. A good bearer under favorable conditions; moderately hardy.

**EARLY ROSE**—(Name changed to Erose. See below.)

**EROSE (Early Rose) (Red and White Clingstone) (Early)**—There are several varieties under the name Early Rose. To distinguish ours we are renaming it Erose. This peach originated in Georgia and was introduced by us. It has a delicious sweet flavor, red flesh, medium size and ripens about a month earlier than Elberta. The tree is a medium grower and can be planted closer than such large growing sorts as Belle of Georgia and Carman. Bears young. Most early varieties lack in quality which makes Erose even more appreciated.





Erose—(Early Rose)—The Best Early Peach.

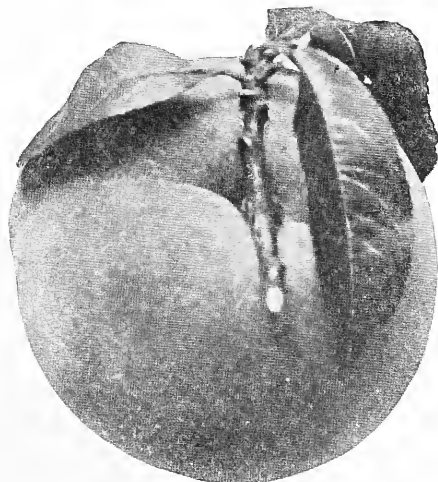
**ELBERTA (Yellow Freestone) (Midseason)**—The most widely and extensively planted commercial peach. Very large golden-yellow, nearly covered with crimson on the sunny cheek; flesh is firm, rich yellow, fair quality. Tree is a moderately vigorous grower, very productive, yielding large quantities of uniform, highly colored fruit, mediocre in quality; moderately hardy in wood and bud, but its adaptability to all soils, its prolific bearing, large size, splendid shipping qualities, and the tendency to color well before fully mature have made it the great market peach.

**ELBERTA CLING (Yellow Clingstone) (Midseason)**—The best yellow clingstone; especially fine for canning, preserving and pickling; large, yellow, round, good for dessert. Tree is a strong, vigorous grower, hardy and productive.

**EUREKA (White Freestone) (Early)**—Very large for an early peach; good quality; white with a distinct red blush on one side; round; flesh is tender, but firm. Tree is above the average size, spreading, semi-hardy to hardy and exceptionally productive.

**GREENSBORO (White Semi-Freestone) (Early)**—A leading early white peach, owing to its showy fruits and its large, vigorous, healthy trees which are early-bearing and exceptionally prolific. It thrives in a great variety of soil and climates. Somewhat inferior in quality; a good shipper and keeps long.

**HEATH CLING (White Clingstone) (Very Late)**—The best of all peaches to preserve or pickle whole. The tree is unusually large, healthy and hardy. Exceptionally good keeper, has been known to keep from October to December.



Heath Cling—Best for Pickles and Preserves.

**HILEY (White Freestone) (Midseason)**—Hiley is the earliest commercial freestone white-fleshed peach; better in quality than most of its competitors; very closely resembles its parent, Belle of Georgia. Flesh is firm, sweet, good quality; a very good shipper; often requires several pickings. Tree is medium size, open, spreading. Productive, but not particularly hardy nor vigorous.

**KRUMMEL (Yellow Freestone) (Very Late)**—A large, round peach, one side a little larger than the other. A rich golden yellow, blushed with carmine. Flesh is yellow, tinted red at the pit. Firm, melting, rich, subacid, and refreshing. Good quality. A good keeper and shipper. The tree is hardy, healthy and a strong, vigorous grower. It ripens about October 1st in Southeast New Mexico and in Central Washington and about September 15th in Central Oklahoma. It is hardier and more productive than Salway. "The latest peach grown at the station. Ripened October fifth."—Ohio Experiment Station, Wooster, Ohio, Bulletin No. 170.

**LATE CRAWFORD (Yellow Freestone) (Late)**—Its high quality, scarcely equaled in richness of flavor, its adaptability to a wide range of soil and climatic conditions make this old variety exceptionally desirable for the home garden. The trees are vigorous, hardy and healthy and the fruit large and very handsome.

**MAYFLOWER (White Semi-Clingstone) (Very Early)**—Earliest peach to ripen. Good size and quality for such an early variety. Its popularity is due to its extreme earliness. Creamy white with dark splashes of red; very juicy; fruit ripens unevenly through a long period, making it especially good for home use. Tree is vigorous, upright, spreading and bears very young.



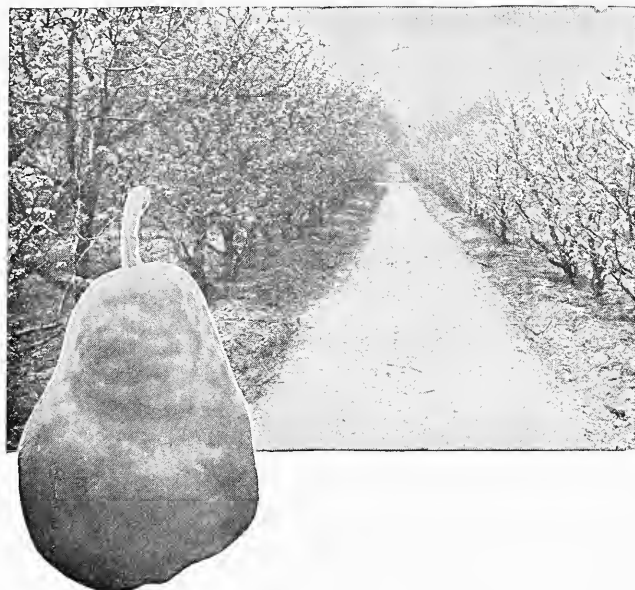
The J. H. Hale (see inside front cover).

**J. H. HALE (Yellow Freestone) (Midseason)**—This variety was discovered by J. H. Hale over 20 years ago and the trees were offered for sale only after he had thoroughly tested it in Connecticut and in Georgia. He sent the fruit in an ordinary barrel packed like potatoes to Neosho, where they arrived in splendid condition. Very large in size; it is a beautiful yellow overlaid with red, and has a firm, fine grained yellow flesh of good quality. It colors up a week before maturity, ripens 3 to 7 days ahead of Elberta. The tree is more stocky than the Elberta. It should be planted with some other variety for pollination.

Our trees are propagated from buds taken from the original bearing trees in the J. H. Hale orchards.

## Pears

**T**HE PEAR is one of the highest quality fruits. All pears should be picked before entirely ripe, especially Garber and Kieffer, otherwise the flesh around the core becomes coarse. Pears may be grown wherever apples succeed. They prefer heavy clay and clay loams and on such soils the growth is slower and there is less danger of blight. As a rule, growth should not be stimulated, certainly not with manure. The pear tree is an upright grower and thrives in sod, making it one of the best fruit trees for yard planting.



A Drive Through an Orchard in Full Bloom.

**SECKEL (Fall)**—The standard of excellence for quality. Small, yellowish brown with russeted red cheek; should be first choice for family orchard. Slow grower, dependable, productive and very hardy, notably free from blight. Bears about fourth year. Blooms midseason.

**WINTER NELIS (Winter)**—The latest, best keeping pear. Can be held in cold storage until spring. Medium-sized, roundish, yellow, russeted pear with a short, heavy neck. Flesh fine-grained, sweet, aromatic, very good quality. Tree is hardy, has wide adaptability, and is a regular bearer. A slender, straggly grower. Blooms late.

### Standard Pears

"Standards" are pears that are propagated on pear roots.

**ANJOU (Fall)**—Fruit is large, heavy, greenish-yellow with dull red cheek often russeted. Very good quality and keeps late. Tree is hardy, long-lived, productive. Tardy in coming into bearing.

**BARTLETT (Late Summer)**—The leading commercial variety, one of the most popular for dessert and canning. Large, clear yellow with blush on sunny side. Flesh is white, fine-grained, juicy and sweet. Tree is vigorous, very productive, hardy, bears young.

**FLEMISH BEAUTY (Early Fall)**—Large, pale yellow, mostly russeted. Very juicy and sweet. One of the choicest when well grown.

**GARBER (Fall)**—Large, brownish-yellow with red on sunny side; flesh firm, granular, juicy and poor quality. Used for canning. Succeeds farther South where other varieties do not thrive.

**KIEFFER (Winter)**—Large, yellow russeted; flesh white, rather coarse, poor quality. A market and kitchen variety that succeeds farther South where other varieties fail. If picked when it takes on a slight yellow tint and placed in boxes in a dark place to ripen, they are good to eat out of hand and superior to most pears for canning. Tree hardy, very vigorous, resistant to blight. Blooms early.

**LINCOLN (Summer)**—Large, yellow, quality good to very good, similar to Bartlett, but more resistant to blight. Succeeds farther south than Bartlett can be grown. It has stood the severest tests of intense, moist, summer heat, and low altitude of the climate at Lincoln, Illinois, where it was originated by W. E. Jones. Comes into bearing early and bears heavy crops annually; very hardy. Blooms midseason.

### Picking, Ripening and Storage Dates for Pears

VARIETIES	IN NORTHERN STATES			IN SOUTHERN STATES		
	When to Pick	When Ripe Enough to Eat	Latest Cold Storage Limit	When to Pick	When Ripe Enough to Eat	Latest Cold Storage Limit
<b>Summer:</b>						
Lincoln.....	July 29-Aug. 18	Aug. 29-Sept. 8	Sept. 15-25	July 19-Aug. 8	Aug. 19-31	Sept. 5-15
Bartlett.....	Aug. 4-Sept. 17	Sept. 10-20	Oct. 1-15	July 24-Sept. 7	Sept. 1-10	Oct. 1-15
Flemish Beauty.....	Aug. 6-Sept. 20	Sept.				
<b>Fall:</b>						
Garber.....	Sept. 4-26	Oct. 6-20	Dec. 1-15	Aug. 26-Sept. 16	Sept. 26-Oct. 10	Nov. 10-25
Anjou.....	Sept. 15-20	Oct. 20-30	Dec. 15-25	Sept. 5-10	Oct. 10-20	Nov. 25-Dec. 25
Duchess d'Angouleme.....	Sept. 16-25	Oct. 20-30	Dec. 15-25	Sept. 6-15	Oct. 10-20	Nov. 25-Dec. 5
Seckel.....	Sept. 17-Oct. 3	Oct. 6-15	Dec. 15-25	Sept. 7-23	Oct. 15-25	Nov. 25-Dec. 5
<b>Winter:</b>						
Kieffer.....	Sept. 26-Oct. 7	Oct. 25-Nov. 4	Jan. 1-15	Sept. 16-27	Oct. 15-25	Dec. 1-5
Winter Nelis.....	Oct. 3-20	Nov. 6-15	Feb. 1-Mar. 1	Sept. 23-Oct. 10	Oct. 15-26	Jan.-Feb.



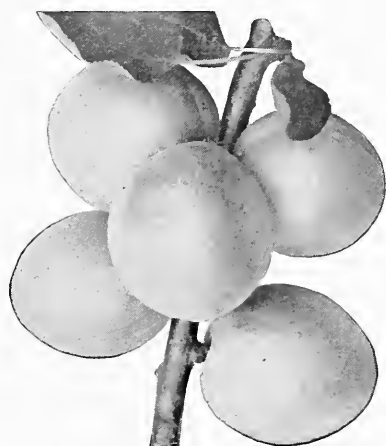
## Dwarf Pears

**T**HE PEAR can be grown more satisfactorily as a dwarf than other fruits. It is especially good for planting in small yards and gardens. It is propagated on quince roots, which make the tree a slow, dwarfish grower, and less subject to blight than standard pear trees. The fruit is the same as that of standard trees.

They come into bearing young, often in the second or third year and are very productive. "It is the common belief that dwarf pears are short-lived but this is not necessarily true."—Prof. W. L. Howard. They can be set close together, usually 10 to 15 feet apart; hence they are especially valuable for home gardens and small yards, where they are ornamental as well as useful. They should be planted 4 or 5 inches deeper than they stood in the nursery row. Since they should never be more than 12 feet tall it is often necessary to remove one-half to two-thirds of the annual growth late each winter.

**DUCHESS d'ANGOULEME** (Fall)—Best when grown as a dwarf. The largest of the good pears; white flesh, rich, good quality. Tree is hardy, upright grower, productive and long lived.

**ANJOU, BARTLETT** and **SECKEL** can be furnished as dwarf trees. For descriptions, see Standard Pear.



Superb Apricot.



Seckel—a little golden russet pear; the sweetest of all.  
The standard of quality.

## Apricots

**T**HE APRICOT is one of the most delightfully luscious fruits grown, when eaten fully ripe and fresh from the tree. It is remarkable that such a rich and beautiful, golden, sweet fruit is not planted more, especially since it ripens just after the early cherries and before the best early peaches. Apricots succeed in many localities and will stand more winter cold than peaches, although the bloom is more apt to be injured by spring frosts. The soil should be well drained, the subsoil as well as the surface. A northern or western slope is best so the opening of the buds will be retarded and the danger of frost damage lessened.

**SUPERB (Freestone)**—The best apricot for Eastern planting; medium size; roundish oval; smooth, light salmon color, with numerous red dots; flesh is yellow, firm, sub-acid;

very good. The tree is a very hardy Russian type, a vigorous grower; very productive; latest-blooming apricot; is adapted to peach regions.

## Quince

**T**HE QUINCE is the ideal fruit for flavoring preserves, jellies, marmalade and cooked fruit. Trees thrive on well-drained, fairly rich soil, are long-lived, and, being small, dwarfish growers, can be planted closely. They are especially suited for yards and gardens.

**ORANGE**—The most widely grown quince. Golden color, large, roundish shape, short neck. Can be kept until January or February. One of the best for all purposes.  
**REA'S (Mammoth)**—Rich, orange color, roundish, pearshape, tapering neck. Very good quality for flavoring other fruits and for baking; almost fuzzless.

**VAN DEMAN**—Unusually large, often weighing one pound or more; rich orange color; round, chunky shape; heavy, firm flesh; especially good quality; bears young, often second or third year on fertile ground.

## Plums

**P**LUMS are especially fine for eating fresh, for jellies, preserves and marmalade, and unexcelled for canning and drying. Some varieties will thrive wherever apples or peaches can be grown. Most of them bear the third or fourth year. One of the best fruit trees for the home garden.

**ABUNDANCE (Early)**—A pinkish-red Japanese plum, covered with a thin bloom. Medium size, roundish oval. Flesh is yellow, tender, melting, unusually juicy and refreshing; sweet, aromatic; quality good to very good. Tree is a vigorous grower, large, hardy and very productive. Adaptable to wide diversity of soils and climates, bears heavily and regularly. Should be picked before quite ripe; dropping and rot are thus avoided and flavor is better. Blooms early.

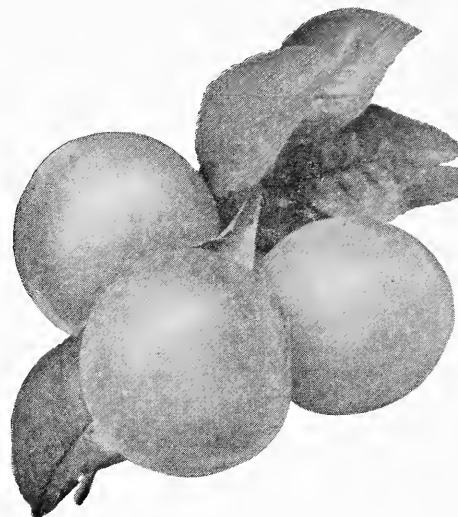
**AMERICA (Midseason)**—An improved Gold, originated by Burbank; a beautiful waxen yellow, with currant-red cheek. Flesh is yellow, juicy, sweet, very good for cooking. The tree is a large, strong grower, spreading, open top; extremely hardy and productive, and succeeds where others fail. Considering its parentage, phenomenally free from rot. Midseason bloomer.

**BRADSHAW**—Medium to large; dark purplish red with yellowish dots and blue bloom. Flesh greenish-yellow. Good quality. Flavor rich, sweet. Midseason. Tree a good grower. Blooms very late.

**BURBANK (Midseason)**—A dark red, roundish Japanese plum; better quality and shipper and less susceptible to brown rot than Abundance. The flesh is a deep yellow, firm, very juicy, aromatic, and sweet; quality good to very good. The tree is healthy, not quite as fast a grower as Abundance; flat, spreading top. A week later than Abundance. Blooms very early.

**FRENCH DAMSON (Late)**—Largest and best quality of the Damsons. Dull purplish-black color. Flesh very juicy, tender, sweet, pleasant, and good quality. Tree large, vigorous, spreading, hardy and productive. Ripens a little later than Shropshire. Blooms midseason.

**REINE CLAUDE (Green Gage—Midseason)**—A large, roundish, oval plum; light greenish-yellow. Firm, sweet, mild, rich flavor, very juicy, aromatic; good to very good in quality. Tree is of medium size and vigor, productive, and hardy. Thrives best on light, sandy soils. Chief defects: Susceptible to sunscald and fruit cracks if showers occur at ripening time. Blooms midseason. Should be in every home garden.



**America—a Beautiful Golden Plum.**

**ITALIAN PRUNE (Late)**—The Italian, or Fellenburg, is the largest, best and one of the most widely grown of all prunes. Long, oval shape, rich, purplish-black; almost dark wine color, overspread with a thick blue bloom. It is a very large size, flesh firm, yellow, aromatic, juicy, rich, sweet and very good to best quality. Fine flavor for dessert and cooking. Keeps and ships well. Succeeds everywhere except in the more Southern states. Late bloomer.

**LOMBARD (Midseason)**—The most widely planted plum in America, noted for hardiness and dependability; adaptable to widely different soils and climates, unusually healthy, very productive, regular bearer and fruit is comparatively free from attacks of the curculio. Medium to large size and oval shape; purplish-red or reddish-violet color, overspread with a thin bloom; easily sold because of its beauty. It is inferior in quality, but does very well for cooking, canning and preserving. Blooms midseason.

**OMAHA (Early)**—A large, round, brilliant, coral-red plum. Flesh is firm, yellow, juicy and sweet. Tree is a strong, vigorous grower, hardy and productive.

**ENDICOTT (Midseason)**—Endicott combines the high quality of the European with the hardiness and adaptability of the Japanese. One of the sweetest, juiciest plums. It averages very large in size, roundish, slightly flattened at the end; dark garnet-red, with a faint bloom. Flesh is a light yellow, firm and rich. Mr. Endicott, the originator, of Southern Illinois, wrote of this plum:

"I have fruited it side by side with Red June and Gold, and I think it is worth more than both of them put together. In fact, it is the best plum I have ever seen for our low elevation and changeable climate. It generally ripens here about the Fourth of July. By thinning and spraying them with self-boiled lime-sulphur, I have grown them two inches in diameter."



**Endicott (Mammoth Gold) Plums.**

**RED JUNE (Early)**—A large garnet-red, heart-shaped Japanese plum, pointed at tip. Flesh is light yellow, meaty, sweet, peculiarly aromatic; quality fair to good. Tree is a large, vigorous, upright, spreading grower; very hardy and productive. Should be planted with other varieties for the purpose of cross-pollination. Abundance and Burbank are good pollenizers for this variety. Usually ripens a week before Abundance. Blooms early.

**SHROPSHIRE DAMSON (Late)**—The most widely planted Damson. Oval shape; purplish-black covered with a thick bloom; flesh is juicy, firm, tender, sprightly and pleasant. Tree is strong, vigorous grower, quite hardy. A standard for productivity and reliability in bearing; fair for eating when fully ripe or after a light frost; one of the best for culinary purposes. Fruit ripens late over a long season. Blooms late.

**WILD GOOSE (Very Early)**—An old-time favorite; bright red; medium size; flesh is yellow, very juicy, tender, melting, very sweet except slightly acid next to the seed; quality fair to good. This is a very large, strong, flat-topped grower; hardy. Good shipper and keeper; comparatively free from brown rot and curculio. The Wild Goose is a native plum and should be planted near other plums of this class for pollenization. Blooms medium early.



Burbank Plum Trees.

**SATSUMA**—Large, dark brilliant red. Flesh dark red, good quality. Flavor rather acid. Ripens medium to medium late. Sterile. Not as hardy as Bradshaw. Tree, spreading. Blooms early.

**WICKSON**—Large to very large, dark red. Flesh yellow, quality good. Flavor sweet. Season medium. Tree upright grower. Blooms early.

VARIETIES	RIPENS	BLOOM	QUALITY	SIZE	HARDINESS	COLOR
<b>Japanese Varieties:</b>						
Abundance.....	Early	Early	Good	Medium	Hardy	Bright Red
Burbank.....	Early	Early	Very Good	Medium	Hardy	Dark Red
Red June.....	Early	Early	Fair	Medium	Hardy	Dark Red
Satsuma.....	Medium	Early	Good	Large	Half-hardy	Dark Red
<b>Native Varieties:</b>						
Omaha.....	Early		Good	Large	Very Hardy	Light Red
Wild Goose.....	Very Early	Medium	Fair	Medium	Hardy	Bright Red
<b>Hybrid Varieties:</b>						
America.....	Medium	Medium	Medium	Medium	Half-hardy	Golden Yellow
Endicott.....	Early		Good	Large	Hardy	Dark Red
(Mammoth Gold)						
Wickson.....	Medium	Medium	Good	Very Large	Half-hardy	Dark Red
<b>Domestica Varieties:</b>						
Bradshaw.....	Medium	Medium	Good	Medium	Hardy	Purplish-Red
Green Gage.....	Medium	Medium	Best	Medium	Hardy	Yellow
(Reine Claude)						
Italian Prune.....	Late	Late	Good	Large	Hardy	Dark Blue
Lombard.....	Medium	Medium	Fair	Medium	Very Hardy	Purplish-Red
<b>Damson Varieties:</b>						
French.....	Late	Medium	Good	Small	Very Hardy	Dark Blue
Shropshire.....	Late	Late	Fair	Small	Very Hardy	Dark Blue
<b>Hansen Hybrids:</b>						
Hanska.....	Very Early	Medium	Very Good	Large	Very Hardy	Bright Red
Opata.....	Very Early	Medium	Good	Large	Very Hardy	Dark Red
Sapa.....	Very Early	Medium	Good	Medium	Very Hardy	Dark Purple
Waneta.....	Very Early	Medium	Very Good	Very Large	Very Hardy	Red

The Italian<sup>1</sup> Prune is a freestone. The others are cling or semi-clings.

## Hansen's Hybrid Plums

**O**RIGINATED by Prof. Hansen of the South Dakota Agricultural College. They are exceptionally hardy and also withstand extremely hot, dry weather, bear very young and heavily and are the first plums to ripen. Good for dessert and cooking.

**HANSKA**—Good size, about 1½ in. in diameter, bright red. Flesh reddish; flavor delicious. Very good quality. Tree strong, upright, vigorous.

**OPATA**—Size 1 in. or more in diameter, dark red. High quality. Bears second year. Tree often grown in bush form.

**SAPA**—Dark glossy purple. Flesh purple-red. Fine flavor. Bears early and heavily. Tree is spreading and handsome in appearance.

**WANETA**—Very large, 2 in. in diameter. Delicious quality. Regarded as the best of the Hansen hybrids.

## Grapes

**T**HE GRAPE is the surest, most dependable of fruits—hardy, vigorous, productive—and begins to bear the second or third year. Every yard or garden should have a few grapevines. They take little room, are quite ornamental trained over arbors, fences, walls or buildings, and they also produce good fruit in spite of neglect or unfavorable conditions. Of course, they respond quickly to care and attention; especially do they require severe pruning. Some varieties are sterile (marked \*) and must be planted near others for cross-pollination.

If the soil is poor or not well drained, the home grower can easily provide a remedy. There are vines still bearing at least 300 years old. It is worth while then if necessary to dig a generous hole 2 feet deep, put a pailful of old bones in the bottom, cover them with good earth and plant the vine.

**AGAWAM (Red)**—The most widely grown of the Rogers Hybrids. Bunches are large. Berry is large, rich, sweet, and aromatic. Vine is vigorous and self-fertile, but somewhat susceptible to mildew, and does not yield well in some localities. Ripens after Concord and can be kept much longer, and improves in flavor. Seems to prefer clay soil. Of the red grapes, it is the easiest grown and most dependable. For home use and market. Keeps in storage till midwinter. Blooms rather late.

**BARRY\* (Black)**—A Rogers Hybrid—one of the best black grapes, ripening soon after Concord. Berries are large, of delicate, sweet flavor, above the average in quality; will keep in common storage into February. Vine is vigorous, hardy and productive. Flowers open midseason.

**BRIGHTON\* (Red)**—A handsome high quality red grape; clusters and berries are large. Vigorous, productive, dependable, adaptable to various soils but often subject to mildew. Ripens before Concord. Deteriorates rapidly in quality after ripening. Blooms rather late.

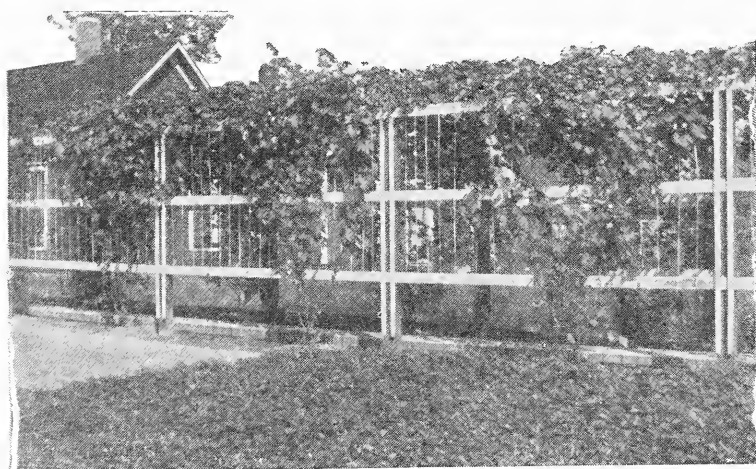
**CAMPBELL EARLY (Black)**—Bunch and berry are large; high quality when mature, but colors before ripe and often marketed in unripe condition; good keeper and shipper. Vine is productive, hardy but not adapted to wide range of soils. Ripens about two weeks before Concord. Blooms midseason.



**CONCORD (Black)**—The most widely-planted grape, known to all. Superior in hardiness, productivity, and regularity in bearing and in ability to withstand disease and insects. Good size of bunch and berry. Very handsome in appearance. The fruit is sprightly and refreshing. It is the leader for making grape juice. No other grape has been able to compete with it on the market, as it can be produced so cheaply. Blooms midseason.

**DELAWARE (Red)**—The standard of quality; the best table grape. Unusually hardy; adapted to wide variation of soils and conditions, and usually bears abundantly. Ripens a few days earlier than Concord. Ships and keeps well and more immune to black rot than other commercial varieties. Its faults are: Small size of vine and berry, slow grower, and foliage susceptible to mildew, which can be controlled by spraying with Bordeaux mixture. It succeeds best in deep, rich, well-drained, warm soils, and should be planted more closely than most other varieties. It commands the highest prices, and is valuable North and South for both home use and market. Blooms rather late.

**DIAMOND (Green)**—Seldom surpassed in quality and beauty. It is the hardiest, most productive and vigorous of the green grapes, although Niagara bears more heavily in most localities. A good keeper and shipper. It deserves a high place among the best for commercial and home vineyards; unfortunately often sold as Niagara. Medium size; green, with tinge of yellow, but less yellow than Niagara. Can be grown as widely as Concord. Blooms midseason.



These Concord and Niagara grape vines bore fruit the second season. They were planted by our customer, Mr. Wm. Meyers of Brookfield, Mo., in the spring of 1922 and the picture was taken in October, 1923.



## Grapes—Continued

**HERBERT\* (Black)**—A Rogers Hybrid. Vigorous, fruitful and hardy except in the extreme North. One of the handsomest high quality black grapes. Ripens with Concord, but keeps long—till midwinter. One of the choicest black grapes for home garden and for commercial growers who supply discriminating markets. Blooms midseason.

**MOORE EARLY (Purplish-Black)**—The most widely planted early commercial grape. Ripens two weeks earlier than Concord. Fair to good in quality. It has the dependability, hardiness and other qualifications which have made the Concord the leading commercial grape. It is best described as an early Concord. It should be planted on rich, well-drained, loose soil, but succeeds on rocky, hilly ground, where others fail. Blooms midseason.

**NIAGARA (Green)**—The most widely planted green grape. Larger bunches and berries than Concord, as good, or better in quality, but inferior to Diamond. Productive, vigorous, adaptable; not as hardy as Concord. Ripens about with Concord. Keeps fairly well. Flavor not at its best unless fully ripe. Blossoms midseason.

**WILDER\* (Black)**—A Rogers Hybrid not as high quality but more reliable than Barry and Herbert. Vines are vigorous, hardy and fairly productive. Medium sized clusters of large berries of good quality, ripening about with Concord; keeps and ships fairly well. Blooms midseason.

**WORDEN (Black)**—Much better quality, larger berries and bunches and handsomer than Concord and is equally healthy, hardy, vigorous, and productive, but often more particular as to soil. Its chief fault is a tendency to crack. Ripens a week to ten days earlier. It does not keep long, but is especially desirable for the home garden and for nearby markets.



A four-year-old Moore Early in the Vineyard of F. J. Bigham, Neosho, Mo.

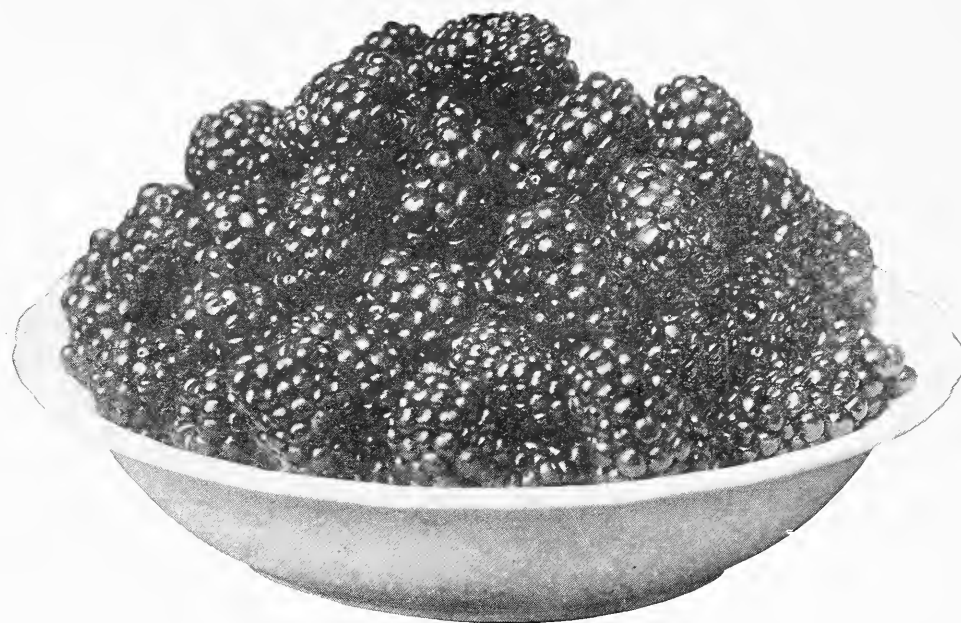


This is a one-year Montmorency Cherry tree, one-year top, two-year root.



This picture was taken in the fall of 1918 in a cherry orchard of 800 trees planted in the spring of 1917. One-year-olds, as shown in picture at left, were furnished by the Neosho Nurseries Co.

## Blackberries



**C**ITY people do not know the really delectable flavor of fully ripe blackberries, since, even for local markets, they must be picked before they are fully ripe and they do not ripen in transit. The cultivated varieties are much juicier and larger and better in quality. They are profitable for local markets, but cannot be shipped long distances. They are much appreciated from the home garden for eating fresh, for canning and preserving, and for cordials. They are easily grown and bear abundantly and early the second year. The best blackberry land is a deep, fine, sandy loam with a large supply of humus.

**EARLY HARVEST (Early)**—Glossy black, medium size, good quality; ships well. Compact, dwarf grower, very productive in the South, but not very hardy, requiring protection in the North. Very susceptible to rust.

**ELDORADO (Midseason)**—Medium to large, jet black, sweet and melting, very good quality; very hardy; vigorous and productive. An extra good keeper; slightly susceptible to rust. Season early to medium, and long. One of the best varieties in most sections east of the Rocky Mountains except the extreme South.

**MERCEREAU (Midseason)**—Very good quality and size. A strong grower, hardy and productive; drouth-resistant. One of the best for northern part of Central Western and Eastern states. Season medium and short.

**MCDONALD (Very Early)**—McDonald is a blackberry-dewberry hybrid, combining the firmness and quality of the

blackberry with the size, earliness and productiveness of the dewberry. It is large, oblong, and very good quality, equaling the best late varieties in flavor and juiciness. It outyields any known variety of blackberry and ripens about two weeks before Early Harvest. The bush is drouth-resistant and such a vigorous grower that it should be planted in rows eight to ten feet apart. The vines trail on the ground the first season, but after that send up long canes of unusual length. It is not hardy and is usually self-sterile. Grown in Texas, Oklahoma and Missouri. Doesn't do well north of the latitude of Washington, D. C.

**Important**—Plant every fourth row to Lucretia Dewberry, as McDonald requires a pollinizer to develop perfect berries.

Some tie the tops to stakes or wires in the spring before growth starts.

### ***Time to Plant***

Blackberry plants are usually set in the spring as early as the ground can be properly prepared, as deep or slightly deeper than they stood in the nursery and the tops are cut back to six inches or less. The soil should be thoroughly packed about the roots.

### ***Planting Distance***

They are planted 3 ft. or more apart in rows 5 ft. or more distant. Some plant 5 or more feet apart each way so as to cultivate both ways.

### ***Cultivation***

Cultivation should begin as soon as the plants are set and continued every week or two until a month before freezing weather. This keeps down weeds and suckers and retains moisture but the cultivation should be shallow. Frequent cultivation during the growing and ripening season is of vital importance since more moisture is then required. The fruit is borne on canes that put forth the previous season.

### ***Mulching***

A deep mulch will remove the necessity of cultivation, help keep down suckers and conserve moisture.

### ***Pruning***

Some growers pinch off the tops of the young canes when at a height of 2½ ft.—3 ft. This topping causes the canes to branch and enables them to stand up under a load of fruit. Immediately after picking, old canes should be cut out and burned and also all but 3 or 4 new canes to each plant.

### ***Training***

A wire trellis is often used. Posts are set 15 to 30 ft. apart in the row and the canes tied to a wire about 2½ ft. above the ground.



## Raspberry

**T**HIS tempting fruit may be had the second year and amply repays proper care. They succeed on a wide range of soil types, but require ample moisture and the soil should be well drained. Good air drainage is also required.



**Ranere (St. Regis) Raspberry**—Bears two crops, spring and fall.

### Cultural Directions—Raspberry

May be planted in the fall where winters are mild, but should be mulched with straw or coarse manure for winter protection. Usually spring is the best time, especially with black or purple varieties.

Space plants 2 to 4 feet apart, in rows 5 to 8 feet apart, red varieties closer than blacks. Set an inch or two deeper than they stood in the nursery, in good rich soil; ground bone is a good fertilizer. Keep well cultivated and free from weeds and suckers. Pinch back the young canes of black raspberries when 18 to 24 inches tall. This causes side branches to grow on the canes and makes the bushes more stocky and self-supporting. The next spring cut the side branches back a third to a half.

Red raspberries require no pruning except where the canes are very tall they may be cut back to 5 or 6 ft. in height.

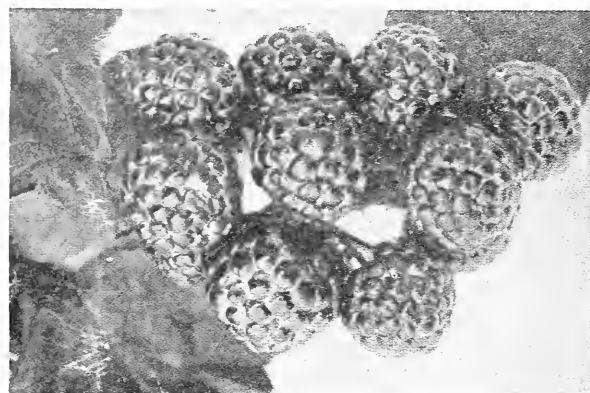
Leave not more than 4 or 5 canes per plant, except possibly with very vigorous growers. Be sure to remove and burn old canes when the crop has been picked.

**CUMBERLAND (Black) (Midseason)**—The most widely planted black raspberry because of its productiveness and quality. Berries are extra large, fine and sweet. It is usually hardy.

**CUTHBERT (Red) (Late)**—The best red because of its superior quality and flavor. Berries are large, rich crimson, firm and one of the best for canning. Plants are moderately hardy, adapted to sandy loam but do well on wide variety of soils.

**KANSAS (Black) (Early to Midseason)**—Widely planted because of large, firm, sweet, well-flavored berries and strong, prolific canes.

**RANERE (St. Regis) (Red) (Everbearing)**—Bright red, small to large berries. Canes are hardy, prolific, healthy, drought-resistant. Bears very early; after the old canes have borne the young canes begin bearing and produce until frost. Very thorough cultivation is necessary to keep the suckers down, otherwise the berries of the first crop will be small and no second crop may form. Long grown in New Jersey, where usually five-sixths of the crop is borne in the spring, the rest in autumn.



**Cumberland Raspberry**—Very Productive, Extra Good Quality.

## Dewberry

**T**HE DEWBERRY is closely related to the blackberry; fruits on last year's canes but trails on the ground. They should not be planted on wet soil but succeed on clay loams and in coarse, sandy soils. For good crops the soil should be fertile or plant food supplied.

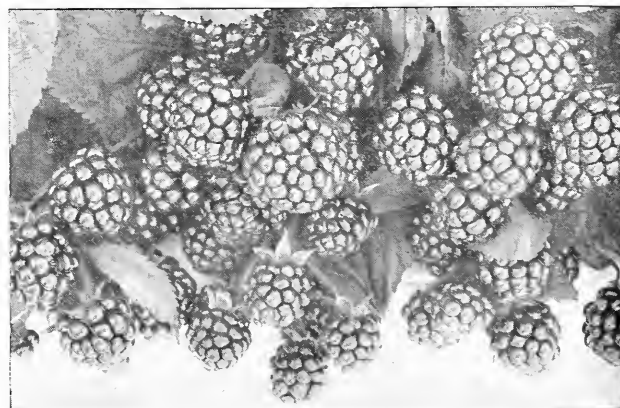
The Dewberry is grown by hundreds of acres in North Carolina and New Jersey. It is also grown in Maryland, Missouri, Texas, Michigan, Colorado and to some extent in most of the other states. In some Northern States, Iowa and Minnesota, the canes must be protected during the winter, usually by covering with 2 or 3 inches of earth which must be removed in the spring.

A 12-year-old field of Lucretia dewberries in North Carolina set in 1903 averaged 100 crates (of 32 quarts each) per acre since coming into bearing.

**LUCRETIA (Very Early)**—The best known and most widely planted dewberry. The berries are large, long, firm and good quality, very sweet if left on the vines a day or two after they would be picked for shipping. Best of all dewberries for shipping. The canes are very vigorous and productive, should be staked or trellised. Can be grown over walls or rocky slopes. Usually planted 3 feet apart in rows 4 to 6 feet apart. Expense of cultivation is less if set 5 feet apart each way.

Some tie the tops to stakes or wires in the spring before growth starts.

After the fruit is gathered, remove and burn the old canes.



## Gooseberries—Currants

**C**URRANTS and gooseberries are used chiefly in making jams, jellies, preserves, pies, tarts, etc. They contain a large amount of pectin, which is necessary for jelly making. They do best in the northern half of the United States and they may be successfully grown on well-drained highlands farther South. Gooseberries are grown slightly farther South than Currants, suffering less from hot, dry weather. Bear second or third year.



Perfection Currant.

### Currants

**LONDON MARKET (Midseason to Late)**—Particularly valuable for Northern climates; extensively planted in Michigan. Medium to large, dark red, very acid. Clusters compact. Bush upright, somewhat resistant to borers and diseases.

**PERFECTION (Midseason)**—Large, bright red berry in long, compact clusters; sprightly, subacid. Bush upright, canes break easily. Vigorous and productive.

**RED CROSS (Midseason)**—A strong grower; quite productive. Large, long clusters of large, light red berries, very easy to pick; quality good to best; not so good for jelly as others. Bush somewhat spreading.

**WHITE GRAPE**—The best white currant. Large clusters of white or golden-green berries, mildly acid in flavor; slender but productive grower.

### Gooseberries

**DOWNING**—The most widely grown variety; medium to large; pale green; excellent for home use and quite profitable for market. Vigorous, and very productive; rarely attacked by mildew and notably resistant to aphids.

**HOUGHTON**—A widely grown variety. Small, dark red. Usually productive, more subject to mildew than Downing.

**JOSSELYN**—Large; reddish green; very productive and vigorous but mildews in some localities. Very good quality.

**OREGON (Champion)**—A large green berry, season late. Bush is very productive, rarely attacked by mildew. An improved variety which combines the large size and high quality of the Downing with the productiveness and vigor of the Houghton; similar to Downing in appearance and quality. Bears young and heavily.



Oregon Champion—The Most Productive Gooseberry.

## Cultural Directions

### WHEN TO PLANT

In Northern Iowa, Nebraska and states north of there, they should be planted only in the spring but in other sections they are better planted early in the fall.

### PLANTING DISTANCE

The usual distance is 6 ft. apart each way. Smaller growers like Perfection and Red Cross currants may be set as close as 4 ft. If the soil is very rich, London Market currant, Downing, Houghton and Oregon Champion gooseberry will need to be 6 to 7 ft. apart.

### SOIL AND SITE

The soil should be cool, well drained and fertile. Silt or clay loams are better than sandy soils. In home gardens, gooseberries and currants may

well be placed permanently among fruit trees, whose shade protects the berries from sunscald. The foliage is usually healthier and the plants more productive in such locations.

### HANDLING ON ARRIVAL

Strong one or two-year plants should be used. If they cannot be set at once they should be separated and heeled in, spread out in a trench and the moist earth firmed closely about the roots. If the roots are dry they should be soaked in water a few hours before heeling in.

### PLANTING

All broken roots should be cut off and the tops cut back to within about 6 in. of the ground. They should be set somewhat deeper than they stood in the nursery and the soil must be packed firmly about the roots.

### CULTIVATION

After planting they should be cultivated frequently during the growing season. After the first year the cultivation should be shallow. Sometimes a mulch of straw or wild hay is used to conserve moisture, keep down weeds and take the place of cultivation.

### FERTILIZERS

Liberal quantities of stable manure and wood ashes will generally prove profitable.

### INJURIOUS INSECTS

The currant worm attacks both gooseberry and currant and should be sprayed as soon as they appear with arsenate of lead, 1 lb. powder or 2 lb. paste to 50 gallons of water.

# Strawberries

**S**TRAWBERRIES are the first fruit to ripen in the spring. Fresh or preserved, they are delicious and healthful, and help out on the grocery bill. Like blackberries and raspberries, they reach their highest quality when fully ripened before picking, which is not the case when grown for market. They do well on almost any soil if well drained, deeply worked, and well fertilized. Standard varieties produce good crops the next spring after planting. Three or four varieties will supply fresh berries over a long season.

*All the following varieties are self-fertile and can be planted alone.*

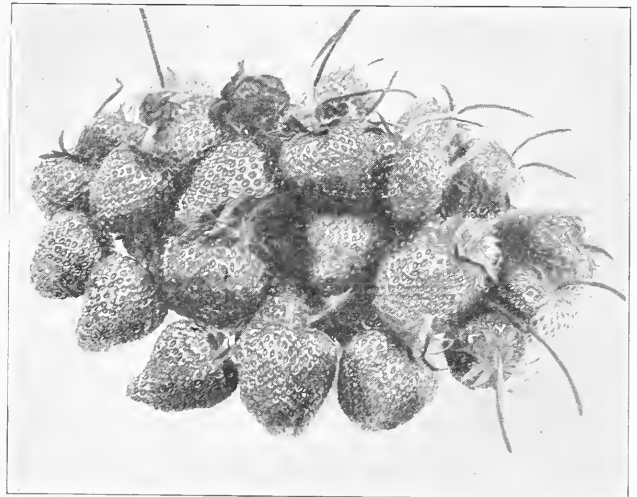
## Standard Varieties

**AROMA (Midseason to Late)**—A richly colored, large berry, deliciously aromatic in flavor, and an excellent shipper. Ripens over a long season. Its chief merits are resistance to disease and productiveness of the plants, and attractiveness, firmness and high quality of the fruit. Best adapted to silt or clay soils. Plants make runners very freely. A leading variety in many strawberry-growing sections. 125,000 crates, 24 quarts each, were shipped out of Neosho in 1922, practically all Aroma. They were sent to New England, Canada, Colorado, Texas and numerous other states.

**(Senator) DUNLAP (Midseason)**—One of the most widely planted varieties. Noted for dependability and productiveness. A medium sized handsome berry, deep glossy red, exceedingly juicy, very good quality. Plants are very hardy and drought-resistant; make runners very freely. Commences to bloom medium early and lasts a long time. Adapted to any type of soil and wide variation in climate. Grown chiefly for home use and local markets.

**KLONDIKE (Midseason)**—The berries are medium size, deep crimson, quality fair to good. Foliage is very resistant to disease; plants make runners freely. The berries ripen evenly and are firm enough to ship long distances. The leading market variety of the Southern States.

**OZARK (Early) (Extra Early)**—Dark red, excellent quality berry, large for their season. The plant is vigorous and productive.



Senator Dunlap—Fine for Home Use.

## Everbearing

The Everbearing will produce the first summer and fall. The second year they bear in the spring and continue fruiting until severe frost comes. They are particularly fine for the home garden. Fifty to one hundred plants set about a foot apart in beds four to five feet wide will supply a small family with berries throughout the season.

Farmers' Bulletin 901, Everbearing Strawberries, U. S. Dept. of Agriculture, November, 1917, says: "The plants are very hardy, their foliage is very resistant to disease and under favorable conditions they continue to produce berries until hard frosts occur. These characteristics make them especially suitable for the home garden."

**PROGRESSIVE**—This is the most widely grown and most successful of the Everbearing varieties. The berries are medium size, dark crimson with dark red flesh, and delicious in quality. The plant is unusually healthy, vigorous, very hardy and productive. It needs a rich soil amply supplied with moisture. If an early frost catches one set of blossoms, another is formed immediately. The first season the blossoms and runners should be cut off until about the middle of July. The ideal berry for the home garden.



A—Too Shallow      B—Too Deep      C—Just Right  
The Right and Wrong Way to Set Plants.

## Cultural Directions

Cover the ground with well-rotted manure—a wheelbarrow load to each 100 square feet. Plow or dig the ground and pulverize deeply and thoroughly.

Do not plant in ground that has just been in sod; if you do, the white grubs will probably destroy the plants.

If the roots are long, cut them back to about 4 inches and put them in water. If it is impossible to set

plants when they arrive, untie the bundles, set the roots in a trench, firm fine soil against the roots, and wet the dirt thoroughly.

Be particularly careful to set plants the correct depth, the crowns just level with the surface, and firm the soil about the roots.

Cultivate about once a week, and only an inch or two deep, but not when the ground is wet.

Keep the blossoms picked off the first season on standard varieties and until about July 1st on Everbearers.

The hill system produces the largest and finest berries. The plants are set 18 to 24 inches apart each way, which allows cultivation both ways, or 15 to 18 inches between plants in rows 24 to 30 inches apart. In either case all runners must be cut off as soon as they appear.

## Garden Roots

**R**HUBARB, Asparagus and Horse-Radish are hardy vegetables that do not require replanting but grow more productive each year. Should be in every home garden.

### *Asparagus*

Every home garden should have asparagus, one of the earliest and most wholesome vegetables, and when canned retains its flavor better than most vegetables.

**WASHINGTON**—A new strain originated by Prof. Norton of the U. S. Department of Agriculture. (Circular 7 "Washington Asparagus"). The most resistant to rust and is also superior in color, size, flavor and market desirability. Green tips.

**READING GIANT**—Highly resistant to rust. The stalks are large, tender and the plants are vigorous and productive. Green tips.

### Cultural Directions

It prefers a sandy loam but succeeds on nearly all kinds of soil.

Plow deep and mix in thoroughly 2 or 3 inches of well-rotted manure. Set plants 15 inches apart in rows 3 ft. apart. Cover the crown or top about 2 inches.

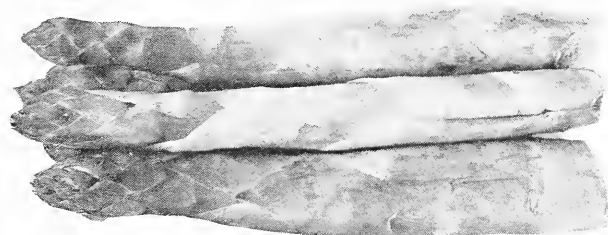
Frequent shallow cultivation is necessary to conserve moisture and keep down the weeds.

Early in fall, cut the stalks close to the ground and remove from the patch. Cover the patch with coarse manure 3 inches deep. Early in spring remove all but the fine manure, which should be forked into the ground.

Keep the ground free from weeds the entire season.

Cut few, if any, shoots until third season.

Apply a pound of salt to about 128 square feet.



Reading Giant Asparagus.

### *Horse-Radish*

Its chief use is as a condiment to promote appetite and invigorate digestion.

It does well on almost any soil except the lightest sand and the heaviest clay, but the best quality and largest size is produced in a deep loam, moderately rich, well supplied with humus; good drainage and a fairly open subsoil are essential.

The roots are planted about 18 inches apart in rows 3 feet apart. They should be set top end up, slightly slanting, and covered 2 or 3 inches deep. The top end of the root cuttings is usually cut square and the lower end slanting so as to be able to determine which end to put down when planting.

Cultivate during summer as often as needed to keep down weeds and conserve moisture.

Harvesting begins about November 1st, earlier of course in some sections. The crop may be left in the ground without danger of injury from freezing and dug as needed.



Strong Asparagus Plant.

### *Rhubarb (Pie-Plant)*

Is hardy in all parts of the temperate zone. Rhubarb comes at an early season when most needed and appreciated.

**MYATT LINNAEUS** is the leading variety; large; early; tender; neither "stringy" nor tough; mild subacid flavor. Rhubarb must be propagated from divisions to secure the characteristics of the original variety. If grown from seed they may or may not be of good quality. Plant good divisions and enjoy this spring tonic the first season.

### Cultural Directions

Like the asparagus it requires well-drained soil and prefers a rich, deep, loose, friable loam.

In the home garden they are planted 2 feet apart in rows 4 feet apart. In commercial plantings they are set 3½ feet each way.

The crowns should be barely covered with dirt. If planted deep they are almost sure to rot during the hot weather of the first season.

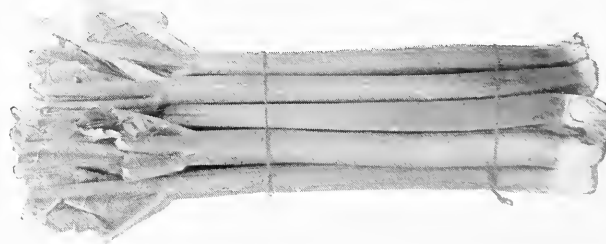
In the north, spring planting is preferred to avoid injury from freezing before they are well established. In the south, planting is sometimes done in the autumn.

Thorough cultivation should be given through the summer and liberal applications of manure every winter.

In gathering the leaf stalks, the base of the stalk should be pulled out, for if broken off at the surface of the ground the rotting of the short piece left causes "stem rot."

Seed stalks should be broken off close to the ground as fast as they appear.

After two or three years the crowns should be divided, cutting out some of the outer sections of crown and root system. These sections make good plants to transplant.



Rhubarb (Pie-Plant).



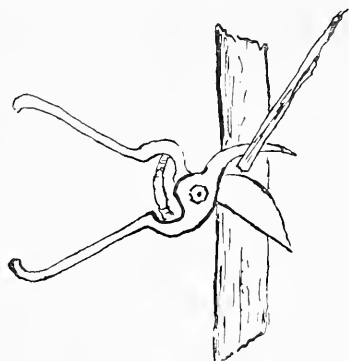
## Pruning

Pruning is the removal from a plant of the part or parts which are undesirable or superfluous, and the object is to improve results or to make them more certain. Nature's purpose is the production of a large number of seed, but the gardener wants quality fruit.

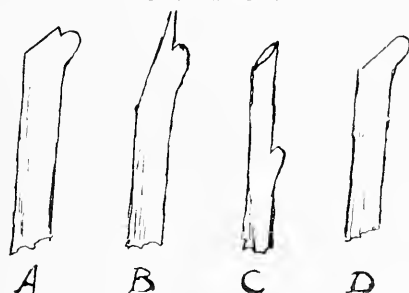
The first thing to develop is a good framework to carry a load of fruit and to make it easiest to spray and harvest. One must picture in advance what one wants to accomplish.

**HOW TO PRUNE**—Make all cuts smooth, close to the trunk or branch, or close to a bud.

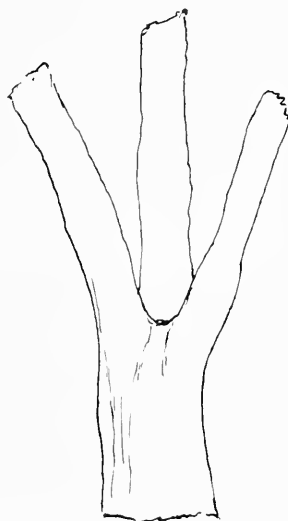
**TREATING WOUNDS**—The general practice has been to paint wounds over two inches in diameter with a paint of pure white lead and pure linseed oil. Some use creosote, a very thin coating, over the center, but this must not be allowed to touch the young wood or young bark. Some recommend Sodium Silicate ("water glass.")



Right way to use Pruning Shears—the cutting blade close to part that is left.



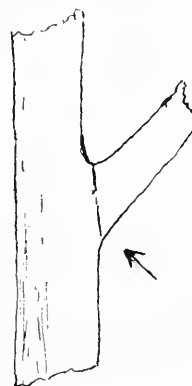
A—Right way to cut twigs.  
B—Too long a slant.  
C—Too long a stub.  
D—Too close to bud.



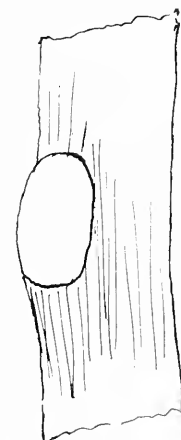
Prevent Bad Crotches like this.



Swivel-blade Saw—a good type for pruning.



Right place to cut off a limb.



Well-made cut—no stub left to rot.

**APPLE**—The apple bears on "spurs" and this fruit-bearing wood must be encouraged and preserved.

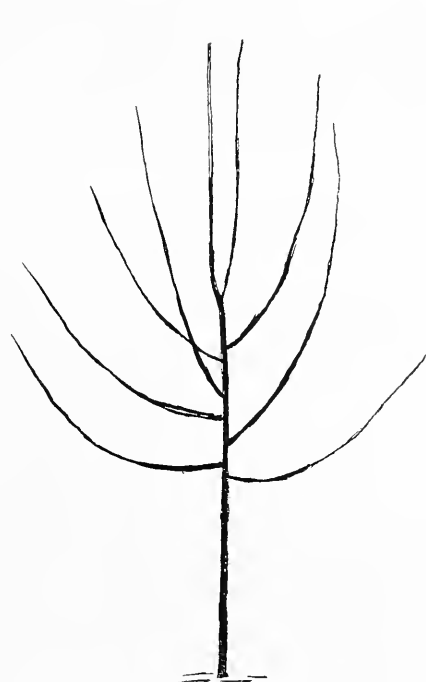
The best form or shape is the Modified Leader Type, which has more and better fruiting wood, is likely to bear younger, avoids weak crotches and has well-spaced branches and a low, spreading top. The training to this type is as follows:

If the tree you plant is a "whip" (with no side branches), the only pruning is to cut off the top 28 to 30 inches from the ground. This is to restore the balance between the top and the root system since a part of the roots may have been lost in digging and the small fibrous roots have to form again from the larger roots.

If you plant a well-branched tree (some varieties of one-year budded apple are well-branched), it will be necessary to remove all but 3 to 5 side branches, selecting those well distributed about the trunk and spaced 6 to 8 inches apart. Also leave one branch growing from the top which will be the leader. This should be shortened a little and the side branches selected also cut back one-third to one-half their length.

Assuming that a whip has been planted, during the first summer pick out the branches you want to keep and pinch back the others. This will cause the selected branches to make a better growth.

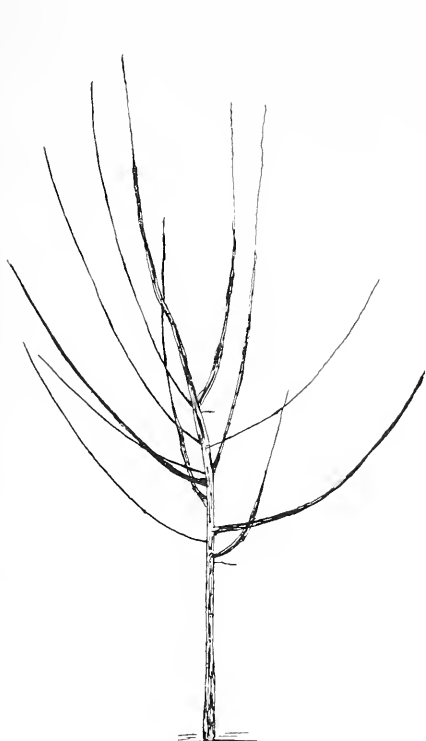
At the end of the first growing season, before growth starts in the spring it will be necessary to cut off close to the trunk all the branches except those selected to form the framework of your tree. Then shorten the leader a little and also any side branches that are too long or unequal in length. See Fig. 1 and 2.



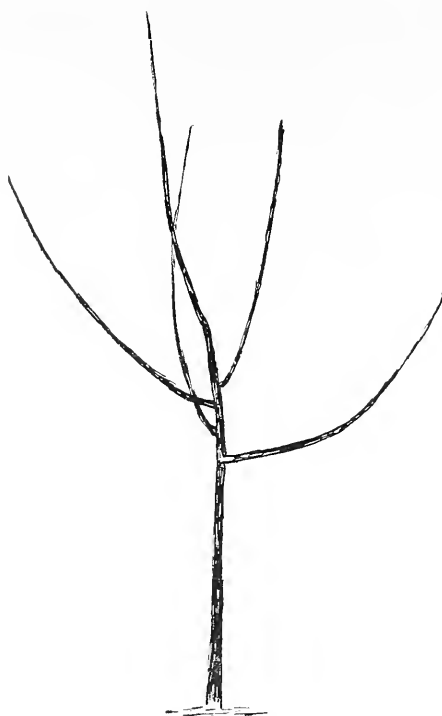
(Fig. 1) At end of first season's growth (if a "whip" was planted), and before pruning.



(Fig. 2) Same tree as in Fig. 1, but after pruning. If you could look down on the tree you would see that the three side branches come out on different sides of the trunk.



(Fig. 3) This shows the tree after two seasons' growth and before the second pruning.

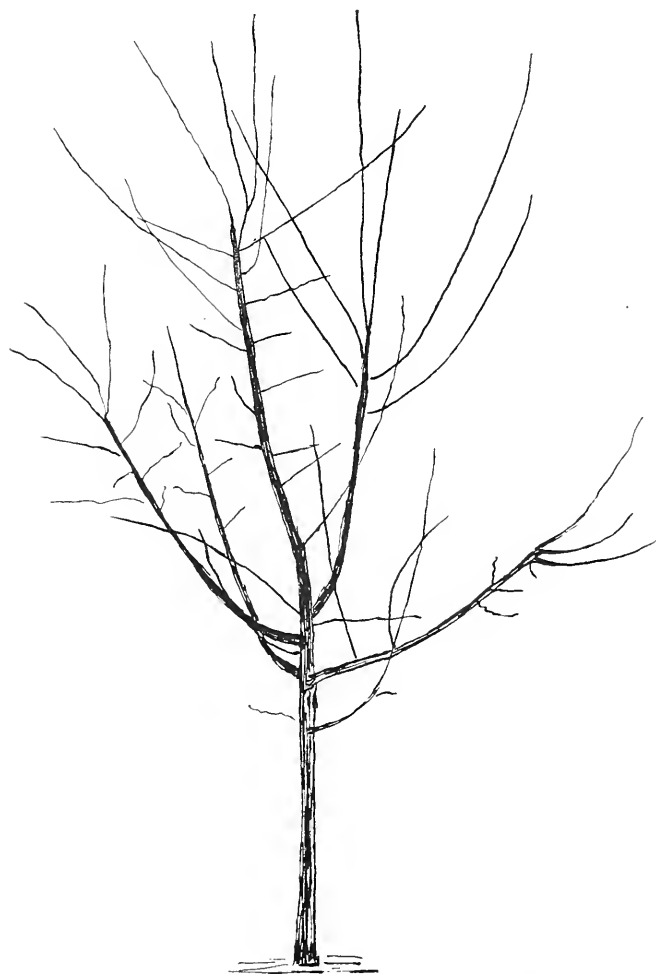


(Fig. 4) The tree in Fig. 3 after second pruning. Many shoots have been removed, and the leader as well as the branches, have been shortened.

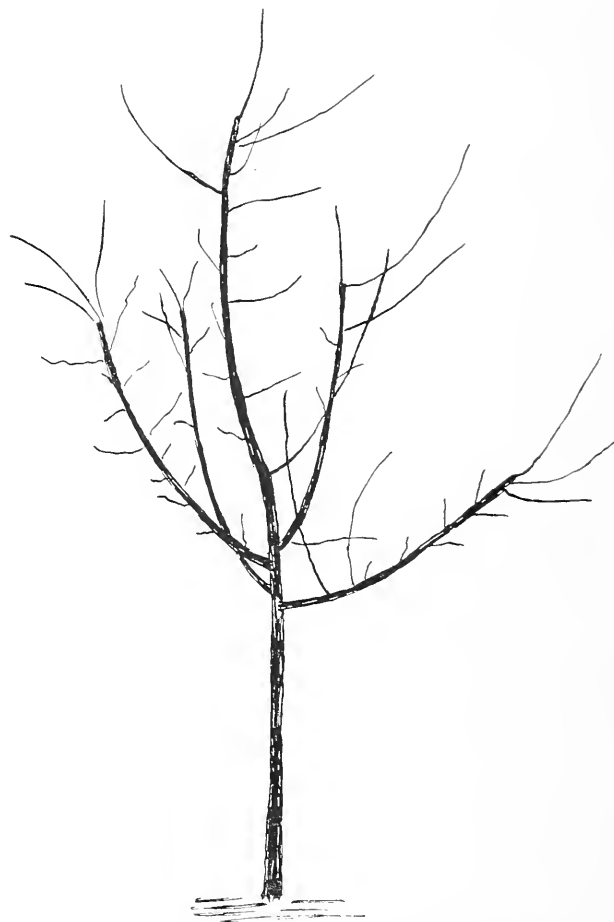
The fourth season two or three more side branches should be selected from the central leader and these may be headed back if they threaten to overshadow the lower limbs. When you have sufficient side branches, probably about six, the leader should be cut off just above the top side branch.

From then on pruning should be as little as is necessary for the proper spacing of framework branches and keeping them in proper proportion. It will be confined to removal of branches or shoots, or heading them back if out of proportion to other branches.

The upper third of the tree should be the thinnest and the lowest the densest, to help maintain good wood all over the tree. This calls for checking of the stronger branches and giving the lower limbs an equal chance to grow and fruit well. If, in heading back, cuts are made to relatively good sized lateral branches, there will be less suckering and quicker healing than if cuts are made back to smaller laterals. However, fertilization and cultivation may be necessary to secure the desired growth throughout the entire tree.



(Fig. 5) After three years' growth, before the third pruning.



(Fig. 6) The tree in Fig. 5 after third pruning. Note the growth of twigs and spurs, fruit bearing wood.

**Bear in Mind**—as trees grow older, two parallel branches even 12 to 18 inches apart will crowd each other and one will have to be removed. Also two branches that cross each other 5 or 6 inches apart near the trunk of the tree, will in time crowd each other and one will have to be cut off. Such conditions should be avoided, otherwise they should be remedied as early as possible.

Cutting a branch heavily lessens total growth of that part.

Pruning a branch lightly increases the total growth of that part.

Two branches growing out from the same place will form a bad crotch. Head one back more than the other, which in time will become the leader or main branch, while the shorter will become a side branch.

"Heading back" is cutting off a part of, or reducing the length of, a shoot or branch.

"Thinning out" means the removal of the entire shoot or branch.

**PEAR**—The pear also bears fruit like the apple, on "spurs," and is pruned much the same. Most varieties, however, tend to grow in an upright form and are usually headed lower. Light pruning is the rule and cuts should be made above outside buds whenever possible. Heavy pruning induces young growth, which is more susceptible to blight.

**DWARF PEARS** are usually trained to pyramid form, which calls for a central trunk with side branches, the longest nearest the ground. The longest branches, called leaders, are severely headed back before growth starts in the spring.

This ought to result in growth of side shoots, which should be pinched back during June and July to develop fruit buds. This is done when the shoots have about six leaves, all but three of which are removed. When these shoots send out other shoots the latter should be pinched back to two leaves as soon as three are formed. This pruning is done every year. A main branch or leader may be allowed to rebranch and these should have the shoots pinched back in the same way as those on a main branch.

**APRICOT** bears fruit on last season's growth and also on fruit spurs.

Pruning is similar to that of the peach. The old wood needs to be thinned out from time to time and the tops will quickly get too thick unless they are properly pruned every season.

**PLUM** bears partly on spurs and partly on last season's growth.

Some growers at planting time prune the same as with peach; others, when setting branched one or two-year olds, select three to five branches, cut them back one-third to one-half and head back the leader proportionally.

Varieties differ widely in habits of growth. The Japanese varieties grow more like the peach and are pruned much the same. The Burbank is a rank, sprawling grower and needs more heading back.

As a rule it is better to let the trees take their natural form. Of course broken, splitting or interfering limbs should be removed, but heading back and thinning out and summer pinching back should be practised with due consideration of the way the tree grows.

**QUINCE**—The fruit is borne at the tips of shoots that grow out the same season from last year's wood. They should be headed low, about 18 inches. This will give enough trunk up to the lowest branch.

Pruning should aim to keep the top open and well spread out by removing superfluous interior branches and by shortening the shoots where fruit is desired.

**PEACH**—The fruit is borne on last year's wood. After the tree is planted, cut off the top 18 to 24 inches above the ground and cut off any side branches about an inch from the trunk, leaving one or two good buds.

During the first season when the growth is four to six inches long, choose three to five side branches on different sides of the trunk and well spaced. Assuming that you select three branches, the highest would be about two feet above the ground and the lowest branch about a foot. Every three or four weeks during the first summer, pinch off the tip ends of all the other branches. If these are very numerous, some of them may be cut off close to the trunk. If this pinching is done, no winter pruning will be necessary.

During the second summer select two or three shoots growing outward, not upright, on the main branches and pinch back the others.

During the third summer, less pinching back is required and during the fourth season practically none is necessary. All that is needed can be done in the winter pruning.

The result should be a tree low-headed, spreading, with a well-balanced framework that will produce large crops of quality fruit and come into bearing young.

This style of pruning causes growth at many different points rather than much growth at a few points near the cuts. Severe pruning only seems to produce better growth, this growth is near the cuts, at the expense of the lower parts of the tree and the total growth of the tree is diminished.

As the trees get older it will be necessary to prune the tops more heavily in late spring (some growers delay this pruning until the trees are in full bloom). If the twig and limb growth lower down in the tree begins to die out it indicates that the centers and top are not open enough. If these twigs and limbs in the lower part of the tree develop a long growth it shows the top and centers are too open.

If you have old trees that seem to need heavy pruning, cut back moderately, say three to five feet, making a smooth cut to a good sized limb extending outward. Then the following summer when the new growth is one or two feet long, remove the strong sprouts that push out where new limbs are not desired.

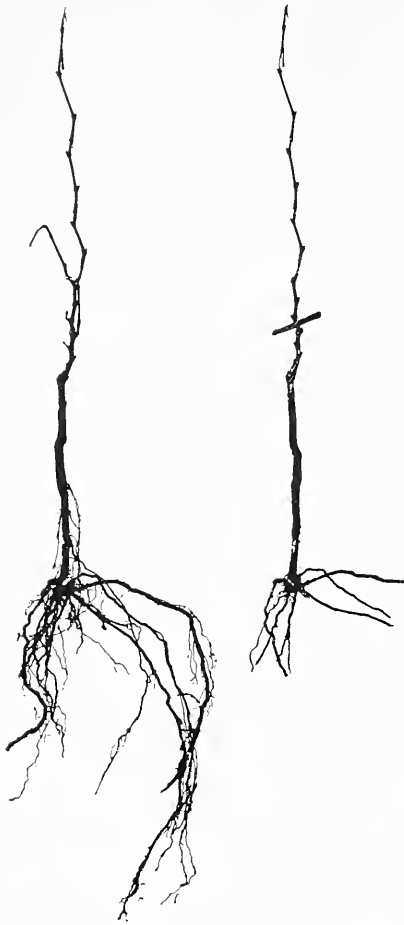


**CHERRY**—The fruit is borne largely on spurs, but also from lateral buds on last season's growth.

One-year Sweet Cherry are "whips" and when transplanted, the top is cut off close to a bud 2½ to 3 feet from the ground.

Two-year Sweet Cherry and both one and two-year Sour Cherry, are branched and when pruned after planting, from three to seven side branches may be left, selecting those that are well spaced and on different sides of the trunk.

From then on little pruning is required. It may be necessary to remove some branches that cross, or some that grow back into the trunk, or some that are too close, or to thin out the top before the branches become so thick that they shade and kill out the lower wood. It is desirable to encourage fruiting in the lower part of the tree. Heavy pruning can be avoided by doing a little every year as needed.



One-year-old grape vine before and after pruning roots, leaving them 6 to 8 in. long. Top to be cut back as indicated by line.

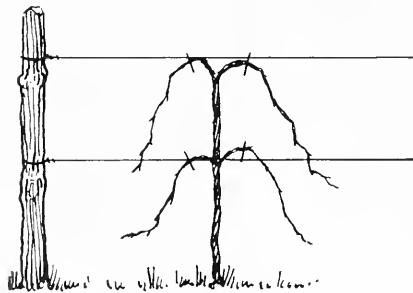


Fig. IV. End of second summer. During that summer the top of the cane was pinched off and also all shoots except four. Lines show where canes are pruned the following winter.

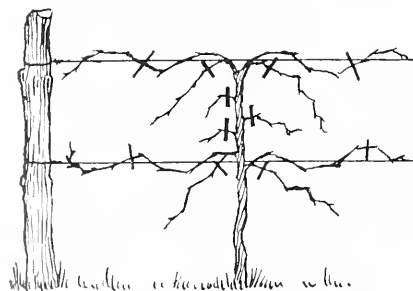


Fig. V. Shows growth during third season. Lines show pruning the winter following.

**GRAPE PRUNING**— The fruit is borne on shoots that put out from last year's growth. When the plants are set, cut off the tops so as to leave two or three good buds (Fig. I). The first summer the vines are allowed to grow at will.

The following spring before growth starts (Fig. II), select the most vigorous cane, cut it back, leaving two good buds and remove entirely all the other canes (Fig. III). If a strong growth has been made the cane selected may be cut back only to the height of two and one-half to three feet. It will then be necessary to decide on a definite system of training.

The most popular is the four-arm Kniffin System. This calls for a trellis of two wires. Posts about six to seven and one-half feet tall are set 18 to 24 inches deep and 10 feet apart. The end posts must be braced. Number 9, 10 or 12 smooth wire is stretched tight on the posts, the lowest wire two and one-half to three feet from the ground and the other wire two to two and one-half feet higher.

The second summer when the new shoots are about a foot long, select the straightest and strongest and cut off the other shoot or shoots. This selected shoot or cane should be tied to the wire, or a stake if the trellis has not already been put up. When this cane reaches the top wire it should be tied to that wire and growth above that wire pinched or cut off. This will force out side branches, which should be removed as soon as they start, except from near the upper and lower wires.

The following spring before growth starts, choose two side branches or laterals to run along each of the two wires. Shorten these back so as to leave 10 to 12 buds to each lateral and cut off the other laterals to one bud.

The third year, remove in summer the shoots that come out on the trunk between the wires, between the lowest wire and the ground, and any that come up from the roots. In the spring select four laterals, two for each wire, shorten them according to the vigor of the plant and cut back other laterals to one bud.

#### PRUNING BEARING VINES, KNIFFIN SYSTEM.

Save four strong canes, one on each side of the trunk for each of the two wires.

Cut these to about 3 feet long for the top wire and a little shorter for the lower wire. Make cuts about an inch beyond the last bud.

Cut off other canes, except that two as near the wires as possible should be cut back to two buds to make fruit bearing wood for the next season.

Winter pruning may be done any time after the leaves fall until growth starts in the spring, but with small plantings it is better to wait until just before growth starts. In any case do not prune when vines are frozen as they are then easily broken in handling.

The amount of fruiting wood to leave when pruning varies with the vigor of the vine. An average Concord vine can produce about 15 pounds and yet produce good fruiting wood for the next year. On such a vine, a total of 30 to 35 buds should be left.



Fig. I. At planting cut back to two buds.



Fig. II. End of first summer, unless all but strongest shoots are pinched off as they grow.



Fig. III. After pruning first winter. With strong growth the cane may be headed higher.

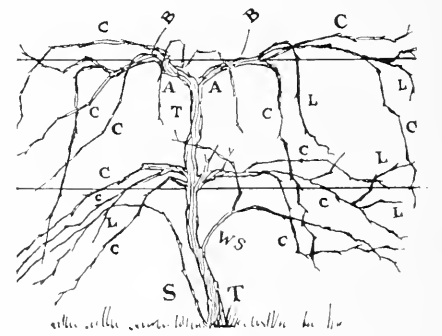


Fig. VI. Mature Vine.

T—Trunk.  
WS—Water Sprouts.  
S—Suckers.  
A—Arms.  
C—Canes.  
L—Laterals which are secondary shoots of a cane.

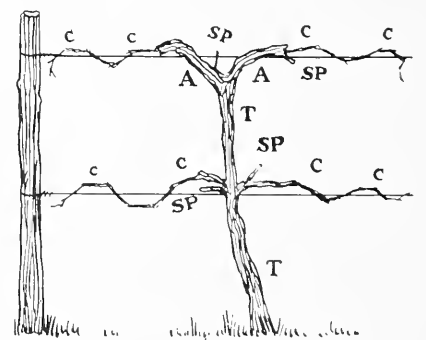


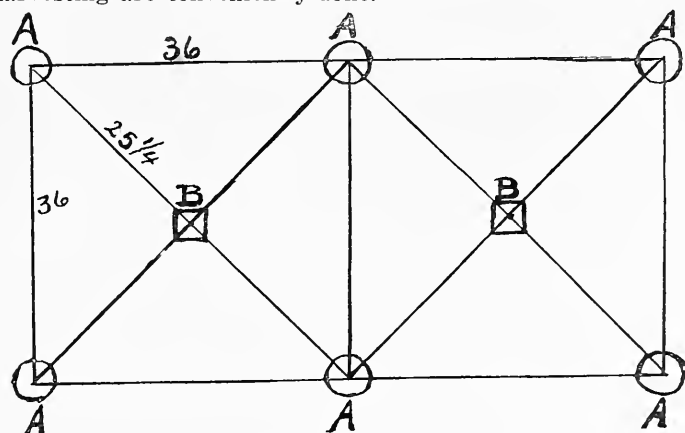
Fig. VII. Mature Vine Pruned.

T—Trunk.  
A—Arms.  
C—Canes, one year old, on which fruit is borne.  
SP—Spurs from which canes will grow for fruit the next year.



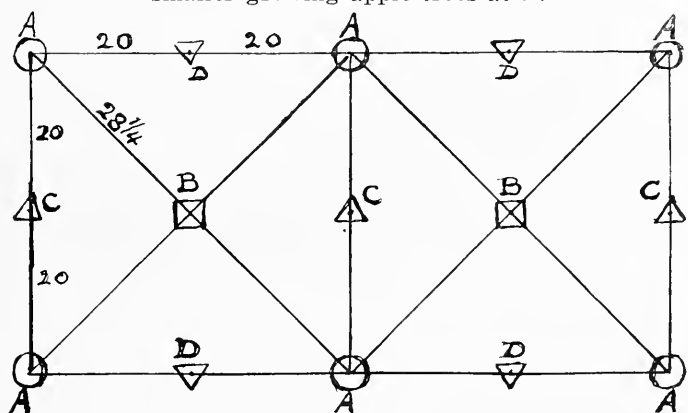
## Planting Plans

The Square Plan is the simplest and most commonly used, and under it the operations of cultivation, spraying and harvesting are conveniently done.



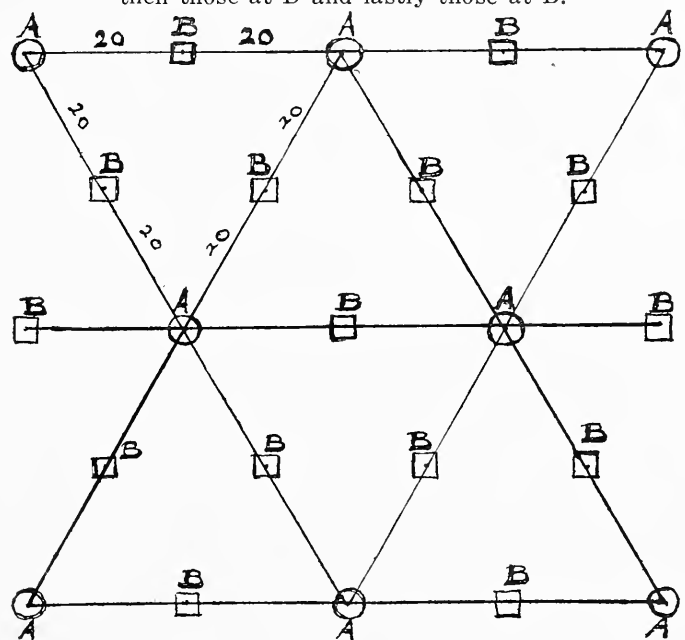
Square Plan

The permanent apple trees are set at A and young-bearing, smaller growing apple trees at B.



Square Plan

The permanent apple trees are set at A and filler trees at B, C and D. Those at C will need to be removed earliest, then those at D and lastly those at B.



Triangular or Hexagonal Plan

Permanent apple trees are set at A, filler trees at B. The Triangular or Hexagonal Plan uses more of the land and permits cultivation in three directions. The trees are set at equal distances from each other in all directions, and 15 per cent more trees are permitted per acre than by the Square Plan.

## Fillers

Fillers are trees set between apple trees, and may be cherry or peach or young-bearing, smaller growing apple trees like Yellow Transparent, Duchess of Oldenburg, Wagner, Wealthy, King David. Cherry and peach are not as desirable as apple because the methods of handling, especially spraying, are different.

Of course, filler trees must be removed when they begin to crowd the permanent trees. There should be no more hesitation about cutting out the fillers than in removal of a limb at pruning time.

There are various ways of setting fillers as suggested under Planting Plans.

## Intercrops

Fruit trees do not use all the ground the first few years and various crops are sometimes used to secure earlier returns from the land. Annual crops such as early beets, turnips, radishes, peas and beans are good, but late vegetables should be avoided since they require late cultivation, which prevents the trees from maturing properly before cold weather. Currants, gooseberries, strawberries and raspberries have also produced good results. With strawberries there is danger that the trees will not receive proper cultivation after the first season.

Grain crops should never be used.

A space 6 to 8 ft. should be left unplanted along each row of trees and increased in width each year.

Of course, if intercrops are grown more liberal fertilization must be given.



Make the land between the young trees pay dividends.

## Why Trees Fail to Bear

The blossoms of some varieties are more or less self-sterile, that is, the pollen of the variety will not fertilize its own blossoms. Home orchards usually consist of several varieties of the same kind and this difficulty is not often present. In commercial plantings it is wise to plant say four rows of one variety, alternately with four rows of another. That is the best plan even with self-fertile varieties like Grimes and Jonathan.

Lack of pollination, and therefore a crop failure, may be due to cold, wet weather at blossoming time.

Failure to bear may also be due to the condition of the trees. If the tree makes a small amount of new growth, the fruiting wood will also be weak. This condition may be remedied by cultivation and feeding, particularly with fertilizers containing a large percentage of nitrogen. On the other hand, the trees may be making too vigorous growth, throwing all their energy into producing wood. In such cases less pruning, less cultivation or less fertilization, or even planting to grass will produce the desired result. Summer pruning is also practiced by some experienced orchardists.

Fruit buds may also be killed by extreme winters, or may be injured by late spring frosts. If the trees are kept in a healthy condition the buds will be hardier.

## Fertilizers

If the growth is poor and the leaves small and yellowish, plant food is needed. Barnyard manure is the best all-round fertilizer and also supplies humus. Wood ashes, ground bone and other general fertilizers may be applied at any time. For quick results nitrogen in the form of Nitrate of Soda or Sulphate of Ammonia is used early in the spring when the buds show green. The amount required varies with the age, size and condition of the tree, 5 or 6 oz. of Nitrate of Soda for one-year-olds up to 4 to 6 lbs. for old trees. Bear in mind that the feeding roots are not close to the trunk of the tree, but extend out beyond the spread of the branches. Sulphate of Ammonia contains more nitrogen and should be used in smaller quantities than Nitrate of Soda, about 25 per cent less.

## Cover Crops

Any crop grown in the orchard the first two years should be one that requires frequent cultivation, such as small fruits, potatoes, melons, tomatoes, etc. With the last cultivation in midsummer it is a good plan to sow a cover crop. These aid in ripening the trees for winter, prevent washing and leaching of the soil, turned under in the spring add humus and fertility to the soil, hold snow and rain in winter and early spring and protect the roots from injury from freezing and thawing.

The legumes make the best cover crops, as they gather nitrogen from the air and deposit it in the soil, the tops rot and supply humus, and the roots decay and improve the soil. Cowpeas are the best for Southern states, south of New York City and Omaha. It is a hot weather plant, thrives remarkably well on light soils, and in dry seasons. 1½ to 2 bushels is the usual quantity of seed used per acre and is sown broadcast or in drills. Soy beans, preferably early maturing varieties, are often used in Northern states. It is a good plan to sow them early enough so they can be cultivated the last one or two times the trees would be cultivated. Sow 1½ to 2 bushels per acre.

Common field peas or Canadian peas are often used in New York, Ontario and Michigan. Clover makes a first class cover crop, but the soil must be in a good state of cultivation. Mammoth Clover is more popular in the North, 12 lbs. to the acre, and Crimson Clover in New Jersey, Delaware and Pennsylvania, 15 lbs. to the acre. Common red clover and alsike, 12 lbs. to the acre, are not as desirable. The safest plan is to sow a mixture and some growers add a little turnip seed to protect the young clover plants from the hot sun; such a mixture as Mammoth Clover 6 lbs., Crimson 6 lbs., Alsike 3 lbs., cowhorn turnips 3 ounces. Vetches are very good; hairy or winter vetch, 1 bushel to the acre, thrives well at low temperatures, is adapted to heavy soil but also does well on lighter soils that have been carefully prepared.

Buckwheat is one of the best non-leguminous cover crops used chiefly in northern and northeastern states. It grows rapidly in late summer, on poor soils, and has a pulverizing influence on the soil but adds very little vegetable matter to the soil. It is best to

delay sowing buckwheat until August 1st or later, about 1 bushel to the acre. Rye is sometimes used because it makes a cover where other crops fail. A good growth of weeds is better than no cover at all.

Constant tillage year after year exhausts the humus in the soil. This must be replaced by cover crops or manure.

## Soil Management for Apple

In the sod-mulch system, all grass is cut and left where it falls or is gathered and piled around the trees. It is the most successful method on slopes so steep that serious soil washing would result if the land were cultivated. It is best on very rich soil and for pear and cherry.

Under the mulch system, sufficient straw or hay is placed around the trees from the trunks out to the ends of the branches to keep all growth down. It is claimed that in severe climates win-



This Delicious apple tree is 4 years old and has about a hundred apples.

ter injury is likely to result with this system.

The tillage cover-crop system is doubtless the most satisfactory. The ground is kept cultivated during the first part of the growing season and then sown to a crop that remains on the ground all winter and is turned under in the spring.

Advantages claimed for clean cultivation are:

That the yields are higher.  
That the fruit is larger and matures later.

That the trees grow larger, having larger trunks and twigs.

That the foliage is better, a richer, darker green.

That the trees have more vitality, resulting in regular crops.

The advantages claimed for sod culture are:

That it is less expensive.

That the fruit keeps longer.

That the fruit is more highly colored.

That there is less washing on hill-sides.

That the ground is in better shape for spraying.

That windfalls are in better condition (which is of course more important with early varieties).

*In any case, constant tillage without cover crops exhausts the humus in the soil.*

## Sources of Information

Each individual must solve his own problems in growing fruit and ornamental plants, but will, of course, derive benefit from the experience of others.

Information may be secured from the U. S. Department of Agriculture at Washington, D. C., direct or through your Congressman. And also from your State Experiment Station and Agricultural College. The work of the latter should receive your hearty support, your State Representative should be fully impressed with the importance of this work. The individual farmer is unable to conduct the necessary experiments and research to determine the most profitable farm practices. The control of old and new diseases and insect pests, the maintenance of soil fertility and the solving of many other problems are necessary to the prosperity of the farmers, and therefore to every citizen.

Here are the addresses of the State Agricultural Colleges and Experiment Stations:

Alabama—	Nebraska—
Auburn.	Lincoln.
Arizona—	Nevada—
Tucson.	Reno.
Arkansas—	New Hampshire—
Fayetteville.	Durham.
California—	New Jersey—
Berkeley.	New Brunswick.
Colorado—	New Mexico—
Fort Collins.	State College.
Connecticut—	New York—
New Haven.	Geneva.
Delaware—	North Carolina—
Newark.	Raleigh.
Florida—	North Dakota—
Gainesville.	Agricultural
Georgia—	College
Experiment.	Ohio—
Idaho—	Wooster.
Moscow.	Oklahoma—
Illinois—	Stillwater.
Urbana.	Oregon—
Indiana—	Corvallis.
Lafayette.	Pennsylvania—
Iowa—	State College.
Ames.	Rhode Island—
Kansas—	Kingston.
Manhattan.	South Carolina—
Kentucky—	Clemson College.
Lexington.	South Dakota—
Louisiana—	Brookings.
Baton Rouge.	Tennessee—
Maine—	Knoxville.
Orono.	Texas—
Maryland—	College Station.
College Park.	Utah—
Massachusetts—	Logan.
Amherst.	Vermont—
Michigan—	Burlington.
East Lansing.	Virginia—
Minnesota—	Blacksburg.
University Farm,	Washington—
St. Paul.	Pullman.
Mississippi—	West Virginia—
Agricultural	Morganstown.
College	Wisconsin—
Missouri—	Madison.
Mountain Grove.	Wyoming—
Montana—	Laramie.
Bozeman.	

## Control of Insects and Disease

**Correct Spraying** is the thorough application of the right material at the right time, or times.

**Insect Pests** are divided into two classes, 1st—Eating Insects, controlled by a stomach poison (arsenate of lead); 2nd—Sucking Insects, controlled by a contact body poison (nicotine sulphate or miscible oils).

**Eating Insects**—Arsenate of lead, powdered form, 1½ lbs. to 50 gallons of water. In small quantities, 1 tablespoon to 1 gallon of water.

**Sucking Insects**—For soft bodied sucking insects, nicotine sulphate is used, ½ pint to 50 gallons of water and 2 lbs. of soap. For small quantities use 1 teaspoonful to 1 gallon of soapy water.

Hard shell scale types of sucking insects are controlled by spraying with a strong mixture of lime sulphur or miscible oil when trees are dormant.

**Fungous Diseases**, such as apple scab, blotch, bitter-rot, cherry leaf spot and peach and plum brown-rot are controlled by either lime sulphur or Bordeaux mixture. Use summer strength so as not to injure fruit or foliage.

### SPRAY MATERIALS

**Lime Sulphur**, a commercial preparation, can be secured in either liquid or dry form. Following directions for liquid: Dormant strength, 1 pint to one gallon of water, 1-8. For trees in foliage or summer strength, 1 gallon to 33 gallons of water, 1-33.

**Self-boiled Lime Sulphur** is prepared by putting 8 lbs. of fresh stone lime in a barrel and nearly covering it with water. When the lime begins to slake, add 8 lbs. of powdered Sulphur which has been previously sifted to remove all lumps. Stir this mixture constantly, adding more water as needed until a thin paste is secured. Then add immediately enough water to make 50 gallons. Strain the mixture thoroughly.

**Bordeaux Mixture** is used in different strengths. 4-4-50 is considered standard strength and indicates 4 lbs. copper sulphate, 4 lbs. unslacked lime to 50 gallons of water. Prepare mixture by dissolving 4 lbs. of copper sulphate in one vessel, slacking 4 lbs. of lime in another, pour together, stir well and add enough water to make 50 gallons. For use in small quantities, commercial preparations can be purchased.

**Heavy Engine Oils** are being used of late years in dormant spraying for control of scale. Write to U. S. Dept. of Agriculture or State Experiment Station for directions.

**Spray Equipment**—The size of the spray outfit depends on the work to be accomplished. In general for shrubs and small garden work a 3 gallon compressed-air tank will be sufficient. For large gardens and home orchards, a barrel sprayer. For commercial orchards, a power outfit. We will be glad to put you in touch with reliable manufacturers of spray outfits.



### CONTROL OF BORERS

These pests of apple and peach trees must be killed by a wire thrust into their tunnels, disclosed by removing a few inches of dirt around the base of the tree. Go over your trees in April or May and in late August or September. After cutting out the borers mound up the the dirt around the trunk about 6 inches high.

The **Flat-head Apple Tree Borer** is usually found from the ground up to the limbs and more often on weak or diseased trees.

The **Peach Borer** can be destroyed in trees 5 years old up by spreading about an oz. of Paradichlorbenzene in a narrow ring around the tree, not closer than two inches from the trunk, and covering this chemical with several inches of dirt well packed down. Apply in the fall when ground is dry.

### RABBIT AND MICE PROTECTION

The best way is to put around the trunk a roll of galvanized wire cloth of ¼ inch mesh. Many use paper but remove it in late spring. Some have found it effective to paint the trunks with Lime Sulphur and Arsenate of Lead or White Lead and Linseed Oil.

Mice injury can be prevented by keeping any weeds or grass away from the trunk or by wire protectors which should be pushed into the ground a couple of inches.

### Fire Blight

This disease sometimes attacks certain varieties of apple, in which case the parts affected should be cut out and burned. It is most serious, however, with pear. The small shoots turn brown and die and the bark finally becomes blackened. It cannot be controlled by spraying. The only method of control is to cut out the affected parts, making the cut six inches below any sign of the disease and burning the blighted parts. If the tools used and the wounds are not disinfected the disease will be spread to other parts of the tree or to other trees. Bichloride of mercury, corrosive sublimate, one tablet to a pint of water, is applied with a sponge or rag. This is a deadly poison.

# Apple, Pear, Quince Spray Calendar

What to Spray for	When to Spray	What to Use
(1) San Jose Scale. Other scale insects. Plant Lice (Aphids).	Any time after leaves drop in the fall, during pleasant weather in winter and until growth starts in spring.	Dormant or Scale Spray. Commercial liquid lime-sulphur 1 to 7 or miscible oils. This spray may be omitted if scale is not present. Arsenate of lead is not required.
(2) Plant Lice (Aphids). Apple Scab. Curculio. Canker Worms. Apple Rust. Leaf Spot. Other biting insect.	When cluster buds are separated and the pink petals show, but before the blossoms open.	First Summer or Cluster Bud Spray. Lime-sulphur (1½ to 50) see note, plus 1 lb. of dry arsenate of lead. Nicotine sulphate (½ pt. to 50 gal. of spray mixture when plant lice are abundant).
(3) Codling Moth. Plant Lice (Aphids). Apple Scab. Leaf Spot. Curculio. Canker Worms. Lesser Apple Worm. Other biting insect.	Start when bloom is two-thirds off and finish before the blossom ends close. Most important summer spray, apply thoroughly.	Second Summer or Calyx-Cup Spray. Lime-sulphur (1½ to 50) see note, plus 1 lb. of dry arsenate of lead. Nicotine sulphate (½ pt. to 50 gal. of spray mixture when plant lice are abundant).
(4) Apple Blotch. Sooty Blotch. Leaf Spot. Curculio. Codling Moth. Lesser Apple Worm. Other biting insect.	Within 12 to 14 days after Calyx spray. If Curculio injury is severe apply within 6 or 7 days.	Third Summer or Curculio and Blotch Spray. Lime-sulphur (1½ to 50) see note, plus 1 lb. of dry arsenate of lead. If apple blotch is severe use Bordeaux 3-4-50.
(5) Apple Blotch. Sooty Blotch. Curculio. Codling Moth. Lesser Apple Worm. Other biting insect.	Apply 5 or 6 weeks after the Calyx spray, or if No. 4 is made within 6 to 10 days, apply No. 5, 2 to 3 weeks later.	Fourth Summer Spray. Lime-sulphur (1½ to 50) see note, or Bordeaux 3-4-50, plus 1 lb. of dry arsenate of lead. If apple blotch is severe, use Bordeaux 3-4-50.
(6) Codling Moth. Lesser Apple Worm. Apple Blotch. Bitter Rot. Sooty Blotch. Curculio. Other biting insect.	Apply about 2 or 3 weeks after No. 5 or 7 to 9 weeks after Calyx spray. Make later sprays at intervals of 10 days or 2 weeks, where apple blotch or bitter rot is serious.	Fifth Summer Spray. Lime-sulphur (1½ to 50) see note, or Bordeaux 3-4-50, plus 1 lb. of dry arsenate of lead. If apple blotch or bitter rot is serious use Bordeaux 3-4-50.

**Sprays Required**—All the above sprays are not likely to be needed. A study of the insects and fungous diseases common in the orchard will help the grower arrange a schedule adapted to his particular needs. The sprays ordinarily needed are 2, 3, 4 and 5 in the northern half of Missouri, while in the southern half 5 or more sprays are generally required. Every fruit grower should study carefully the conditions in his own orchard, including the insect pests and plant diseases, in order to be able to work out a spraying program best adapted to his own particular needs.

**Lime Sulphur Solution**—Where spray guns are used it may be advisable to dilute the lime sulphur at the rate of 1¼-50 on account of danger of burning foliage and fruit. Lime-sulphur as referred to in the spray calendar means commercial solution testing about 33 degrees Baume. Lime-sulphur is more apt to burn in dry, hot weather while Bordeaux is most dangerous in cool, cloudy weather.

**Amount of Spray Needed for Trees of Various Ages**.—The amount of spray required for each tree will depend upon the size of the tree and the thoroughness of the spraying work. In general the amount needed per tree for apple, pear, peach, plum and cherry trees does not differ greatly until the trees are about 10 years old. After this age is reached the apple trees will usually need from 1 to 6 or 7 gal. more spray per tree than the pear, peach, plum or cherry. Trees from 1 to 3 years old will require approximately ¼ to 1 gal. each; trees 3 to 5 years, ½ to 2 gal. each; trees from 5 to 7 years, 2 to 3 gal. each; trees 7 to 10 years, 3 to 4½ gal. each; trees 10 to 14 years, 3½ to 5 gal. each; trees 14 to 18 years, 4 to 7 gal. each; trees 18 to 24 years, 5 to 10 gal. each; trees 24 years old or over may require from 8 to 14 gal. each.

**How to Calculate Amount of Spray Materials to Buy**.—**Dormant or Scale Spray**.—To determine the amount of lime-sulphur to purchase, multiply the number of trees about the same age by the amount per tree as estimated above. Then multiply this by the number of sprays to be made, and divide the total by 350. The result will be the number of 50-gal. barrels of concentrated lime-sulphur solution that should be

purchased. A 50-gal. barrel of lime-sulphur solution diluted at the rate of 1 gal. of the concentrated solution to 7 gal. of water will make approximately 350 gal. of spray.

**Lime-Sulphur for Summer Sprays**.—A 50-gal. barrel of lime-sulphur solution diluted at the rate of 1½ gal. of the strong solution to 50 gal. of water will make approximately 1700 gal. of spray. To find the quantity of lime-sulphur required, calculate as indicated above by multiplying the number of trees about the same age by the amount estimated per tree. Then multiply by number of sprays to be made and divide by 1700. This will give the number of barrels to be purchased for the summer sprays.

**Arsenate of Lead**.—Multiply the number of trees of the same age by the estimated amount of spray needed for each tree, then multiply this by the number of sprays to be made and divide by 50. This will give the number of 50-gal. lots required. Now multiply this by 1, 2 or 3, depending upon the pounds of dry arsenate of lead or paste arsenate of lead you expect to use for each 50 gal. of spray. The product obtained will give the number of pounds arsenate of lead to purchase.



# Peach, Cherry, Plum Spray Calendar

What to Spray for	When to Spray	What to Use
(1) Peach Leaf Curl. Brown Rot. San Jose Scale.	Any time after leaves drop in fall, during nice weather in winter and until just before growth starts in spring.	Commercial lime-sulphur (1 to 7). If scale is not present use Bordeaux mixture (4-4-50) or lime-sulphur solution (2 to 50).
(2) Curculio. Other biting insect. Peach Scab. Cherry Leaf Spot. Brown Rot. Plant Lice (Aphids).	Apply after blooming and when most of the shucks and blossoms are off the fruit.	Arsenate of lead, dry, $\frac{3}{4}$ lb. in self-boiled lime-sulphur (8-8-50), or in 50 gal. of water to which is added milk of lime, from 2 to 3 lbs. of stone lime. Add nicotine sulphate $\frac{1}{2}$ pt. to 50 gal. spray if plant lice are injurious.
(3) Curculio. Other biting insect. Brown Rot. Peach Scab. Cherry Leaf Spot. Plant Lice (Aphids).	Apply 6 to 10 days after shucks and blossoms are off. If curculio is not serious, 2 weeks after shucks and blossoms are off.	Self-boiled lime-sulphur (8-8-50) plus $\frac{3}{4}$ lb. of dry arsenate of lead.
(4) Curculio. Other biting insect. Brown Rot. Peach Scab. Cherry Leaf Spot.	Apply 2 to 3 weeks after No. 3 or at least 3 weeks before fruit ripens.	Self-boiled lime-sulphur (8-8-50) plus $\frac{3}{4}$ lb. dry arsenate of lead.

**Explanation of Spray Calendar for Stone Fruits.**—Where San Jose scale and Peach Leaf Curl are not present, sprays No. 2 and No. 3 will generally afford sufficient protection.

During wet season, Elberta and later varieties of peaches may need later applications of self-boiled lime-sulphur (8-8-50), but in no instance should any variety of stone fruit be sprayed with this mixture later than 3 weeks before picking time.

## PRACTICAL HINTS TO REMEMBER IN SPRAYING

Weigh or measure accurately all spraying materials and use them according to directions. If it is desired to experiment, do it in a small way and remember that at least three or four seasons' results should be secured before the practice is adopted for the whole orchard.

Apply the sprays at as nearly the proper time as possible and remember that the leaves and fruits are not protected unless they have been thoroughly covered with the spray. Unsatisfactory results are more often due to poor spraying than to other factors.

Apply the spraying mixtures as soon as possible after they are diluted and mixed for use. If any of this spraying solution is left in the spray barrel or tank after the work is finished, pour it out or use it in respraying a few trees. It is not advisable to keep the diluted and mixed spraying solution until time for the next application. Chemical changes may occur in the lime-sulphur arsenate of lead or Bordeaux arsenate of lead solution after standing for a time and if applied to apple trees it may russet or burn the fruit and foliage badly.

Use the standard spraying mixtures until you are convinced, either by your own observation or by the observations and experiments of your State College of Agriculture that the new materials are equally as good or better than the old.

Know when to spray, what to use, how to apply the spray to the best advantages and what insects and diseases it is necessary to control.

Before the spraying season begins, secure enough spraying materials for at least two applications. This is necessary because there is only about seven to ten days' time between the first and second summer sprays. Delays in ordering spray materials may mean the loss of a fruit crop.

Spraying materials if properly mixed, diluted and applied seldom do material injury to the leaves or fruit. Where injury is observed, however, study it carefully and be sure that the spray mixture is at fault before making radical changes in the spraying solution. Frost injury, fire blight, black rot and other factors that may do harm are often mistaken for spray-burn injury.

Use spraying equipment capable of doing the work required. Needed spraying accessories, such as better nozzles, spray rods and hose may mean the success or failure of the spraying work.

The practice of employing someone to spray the orchard often results in considerable expense and unsatisfactory fruit. It is usually advisable to spray your own orchard or lease it upon a share or cash basis.

Clean the spray tank or barrel, hose, rods and nozzles after each spraying by pumping clean water through them. Detach or oil the metal parts of the outfit which are apt to be difficult to adjust or remove as a result of the action of the spray.

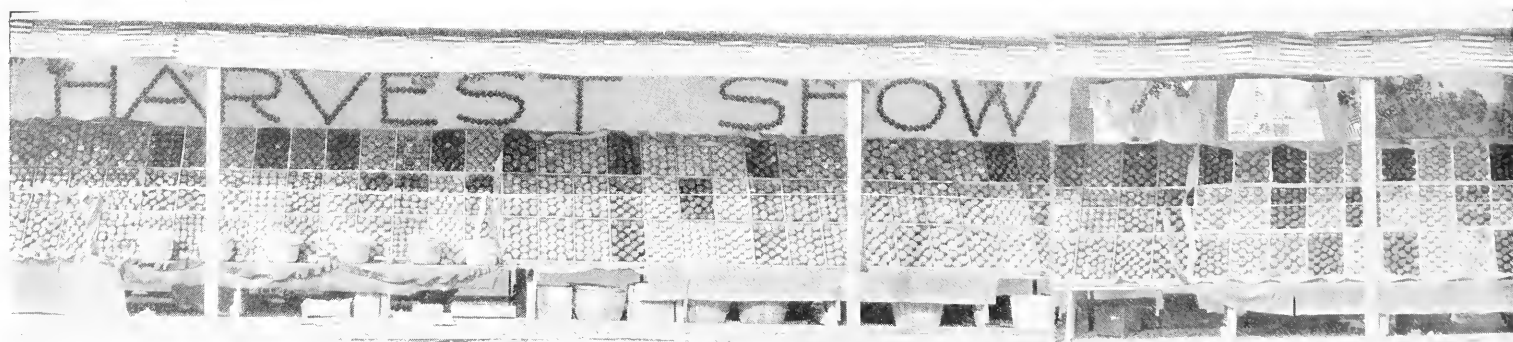
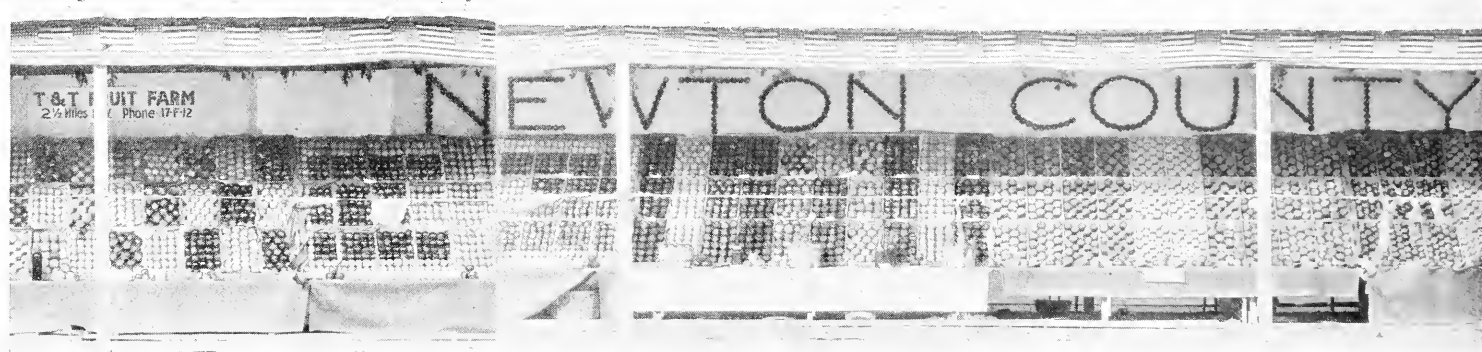
To prevent injury to the face and hands from contact with the spraying solution, smear a heavy coat of vaseline on the face, wear a slouched hat and a pair of mule-skin gloves, which should be kept thoroughly coated with axle grease.

In applying the third, fourth and later summer sprays, if the weather is hot and bright the lime-sulphur solution may burn the fruit. Under such conditions Bordeaux 3-4-50 and arsenate of lead is recommended. It is also true that Bordeaux is more apt to burn during cloudy, cool weather than lime-sulphur.

## Grape Spray Calendar

What to Spray for	When to Spray	What to Use
(1) Scale Anthracnose	In the spring before buds begin to swell.	Lime-sulphur solution, winter strength for both Scale and Anthracnose, or Bordeaux, double or triple strength for Anthracnose.
(2) Flea Beetle only	As buds are swelling. Repeat in 5 to 7 days.	Lead Arsenate (dry) 3 lbs. to 50 gallons.
(3) Black Rot Anthracnose Flea Beetle	When shoots are showing second or third leaf.	Standard Bordeaux for rot. Lead Arsenate (dry) 3 lbs. to 50 gallons for insects, if needed.
(4) Black Rot Anthracnose Curculio Flea Beetle Berry Moth	Before blossoms open.	Standard Bordeaux for rot. Add 2 lbs. of soap to each 50 gallons. Use Lead Arsenate (dry) 2 lbs. to 50 gallons for insects.
(5) Black Rot Anthracnose Curculio Berry Moth	After blooming.	Same as for preceding application.
(6) Black Rot Anthracnose Insects	10 to 14 days after blooming.	Same as for preceding application.
(7) Black Rot Anthracnose Insects	3 to 4 weeks after blooming.	Same as for preceding application.
(8) Black Rot Insects	About 6 weeks after blooming. One later application may be necessary.	Same as for preceding application.

The spray program for grapes centers around the treatment for black rot. The usual recommendations include three sprayings, before blooming, after blooming and two weeks after blooming. In vineyards where the disease is of moderate consequence, three sprayings may be sufficient, but where it is severe, five to seven may be required.



This Apple Display at Neosho, Missouri, was photographed October 16th, 1924. It extended one block and is not all included in these pictures. Experienced horticulturists declared it was one of the best apple displays in the state. Nine of the exhibitors, who operate 800 to 1,000 acres of fruit, are our customers and have written us expressing their satisfaction with our stock and with their dealings with us.

## Peonies



Duc de Wellington.

Peonies rival the rose in perfection of form and color. The flowers are lasting and some varieties are fragrant. They are very free from disease and insect pests. Perfectly hardy and easily grown. All they ask is a good soil and a winter mulch. The blooms increase in size and number with age. They are permanent and do not have to be moved or transplanted. They are used singly, as specimens, in massed beds, or in perennial or shrub borders.

*Peonies should be planted in the early fall, from 18 to 36 inches apart, and set so that the eyes will be not more than two to three inches below the surface of the soil. Bone meal is the best fertilizer.*



Felix Crousse—Brilliant Red

**FELIX CROUSSE (Midseason)**—Very brilliant, ruby-red; large, fragrant. Free bloomer.

**FESTIVA MAXIMA (Medium Early)**—White, usually central petals tipped with carmine; very large, double, with spicy fragrance. Best of the whites.

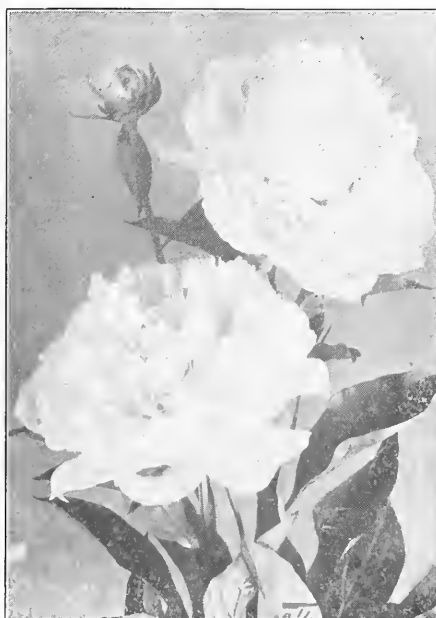
**JEANNE D'ARC (Midseason)**—Delicate pink, with yellow-white center, spotted with carmine. Fragrant, profuse bloomer.

**MADAME LEBON (Midseason)**—Bright cherry pink; very large.

**MEISSONIER (Midseason)**—Brilliant red-dish-purple, medium size, well formed bloom; odor pleasant; tall vigorous grower; free bloomer.

**NIGRICANS (Midseason)**—Dark crimson; compact bloom.

**PRINCE IMPERIAL (Moderately late)**—Dark red; very large.



Couronne d'Or (Crown of Gold)—One of the Largest Whites

**COURONNE D'OR (Crown of Gold) (Late)**—Very large, white, full flower with ring of golden stamens and few carmine tipped petals at the center; fragrant. Strong grower and very free bloomer.

**DELACHEI (Late Midseason)**—Deep purple-crimson; large semi-double.

**DORCHESTER (Late)**—Pale pink. Large, compact, rose type; fragrant; medium height; strong, thick stems. One of the most beautiful pink peonies.

**DUCHESSE DE NEMOURS (Early)**—Cup-shaped bloom, broad guard petals of white and narrower central petals of sulphur color with oftentimes a green marking; fragrant; free bloomer.

**DUC DE WELLINGTON (Late Midseason)**—Ivory white, creamy center; very large and double; fragrant.

**EUGENE VERDIER (Late)**—Large, pale pink, rose type bloom.

## Iris

Iris are often called hardy orchids because of the richness and beauty of the flowers. They vary in height from 1 to 3 feet, are very easy to grow, and blossom early in exquisite shades of many beautiful colors. Can be planted in the fall (September on) or spring.

Black Prince blooms very early and is about gone before the others start. Then comes Perfection and Fairy, and following them in close succession come Queen of May, Celeste, Flavescens, Madame Chereau, closing with Sans Souci, Orientalis and Snow Queen.



**BLACK PRINCE (American Black Prince)**—Purple-lilac and rich velvety black, very early, stem 24 inch.

**CELESTE**—Pale azure blue; strong branching grower; one of the best; stem 30 inch.

**FAIRY**—White, delicately suffused with soft blue, beautiful; very fragrant; stem 30 inch.

**FLAVESCENS**—A delicate shade of soft yellow; stem 2 to 3 feet.

**MADAME CHEREAU**—White, frilled with clear blue; stem 2 to 3 feet.

**ORIENTALIS**—Narrow bladed leaves with small flowers of exquisite blue; slender stems; 1 to 2 feet.

**PERFECTION**—Dark velvety purple and lavender-blue; handsome; stem 30 inch.

**QUEEN OF MAY**—Lilac with rose tint; stem 2 to 3 feet.

**SANS SOUCI**—Canary yellow and crimson-brown; short stem, about 2 feet.



Iris will thrive in spite of neglect it. If planted too deep they will rot. where other flowers would fail but does If planted in the fall, they should be best on fertile well-drained soil. They well mulched with loose soil, leaves or may be planted in the spring but give coarse manure and this should be raked better results and more bloom the first off in the spring. For planting along season if set in the fall from August borders or in masses they are spaced until the first frost. Put the crown of 8 to 10 inches apart. If planted in the root about two inches below the rows set 18 inches apart in rows 3 feet surface and press the dirt firmly about wide.

## Ornamentals

THERE is growing appreciation that the grounds are a part of the house. Hundreds who see the grounds never know anything about the comfort and beauty hidden by the four walls, but the surroundings reflect the taste and refinement of the owner to the passerby.

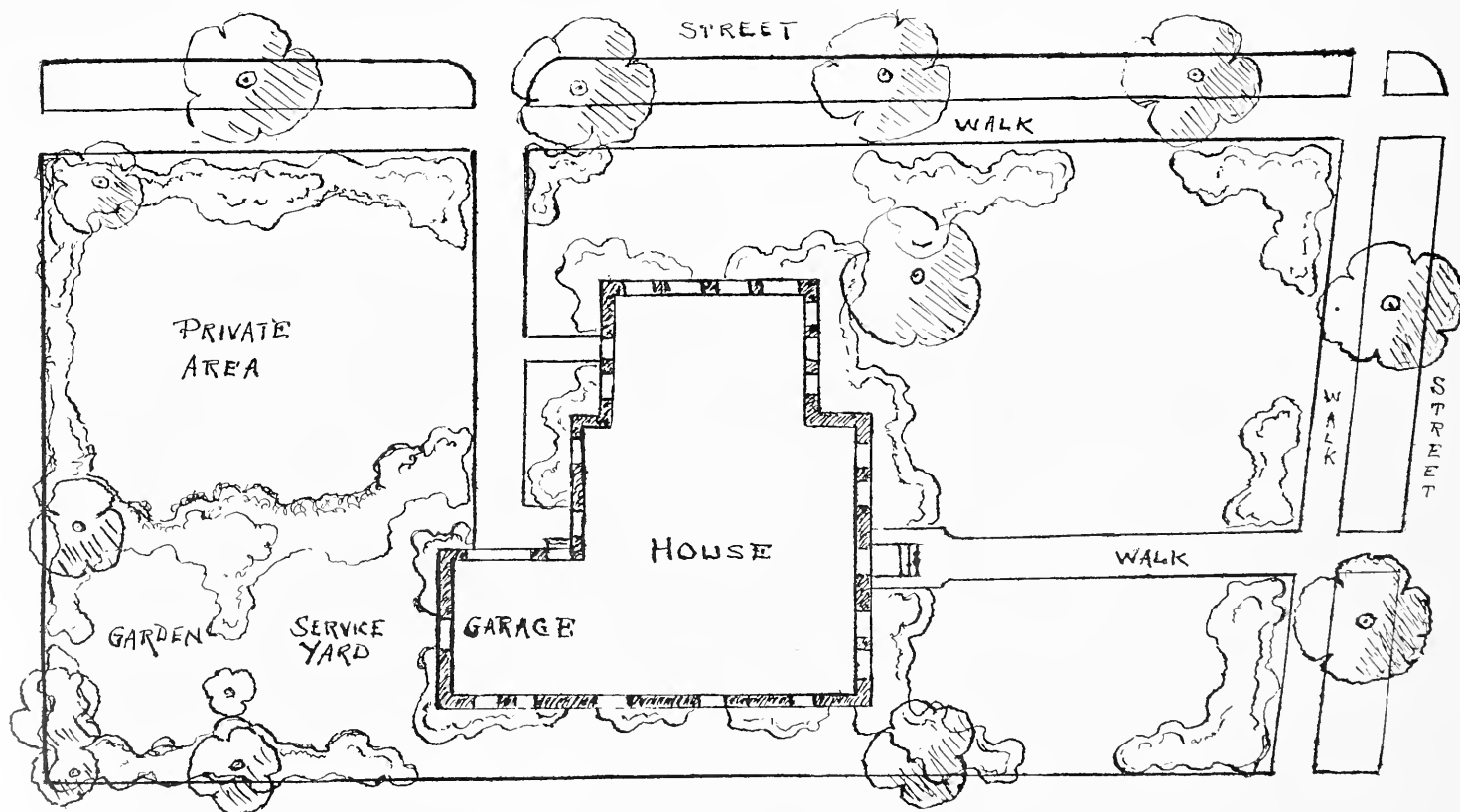


The problems of location, exposure to the sun, preservation of good outlooks, arrangement and construction of walks and drives are often already passed and few, if any, changes can be made. But every house may be made more attractive and a pleasanter place to live by proper planting and care.

Whenever possible and practical, a landscape gardener should be consulted. But many home owners have to get along without professional advice.

In such cases the first step should be the making of a complete plan, then plantings can be made from year to year to suit one's pocketbook and preference, and fewer mistakes will be made.

There are three distinct areas or parts of the grounds. (a) A public area, the front yard, with plantings confined to the borders and around the foundations and corners of the house; (b) A service area for the garage, or the fruit and vegetable garden, or for drying clothes, which may be screened from the living rooms of the house and from the grounds, and easily reached from the kitchen, the basement and the street; (c) The private area for the outdoor enjoyment of the occupants and guests, a simple lawn bordered by trees, shrubs, and flowers arranged to frame desirable views and screen undesirable views or objects.





### Making the Plan

Locate on paper, using a scale of 8 to 20 feet to the inch, an outline of your property, putting in their proper location the house and all existing buildings, trees, etc. You can then mark the locations for planting trees, shrubs, etc.

In case you wish us to offer suggestions, other information should also be supplied—the color and height of the house; heights of foundations, of porch and of steps; location of windows and doors; height of windows from ground; points of compass; what views should be kept open; slope of the ground, character of adjacent property, and, if possible, pictures of the property from several points of view.

Too great a variety is not desirable, and most varieties make a more pleasing effect if planted in groups.

A simple lawn is best, bordered by trees, shrubs and flowers, placed to frame desirable views, screen undesirable views or objects or to secure privacy.

Plant in masses or continuous borders along the boundaries, the heavier masses at the corners.

Leave the center of the lawn open,—the place for flower beds is in the back yard.

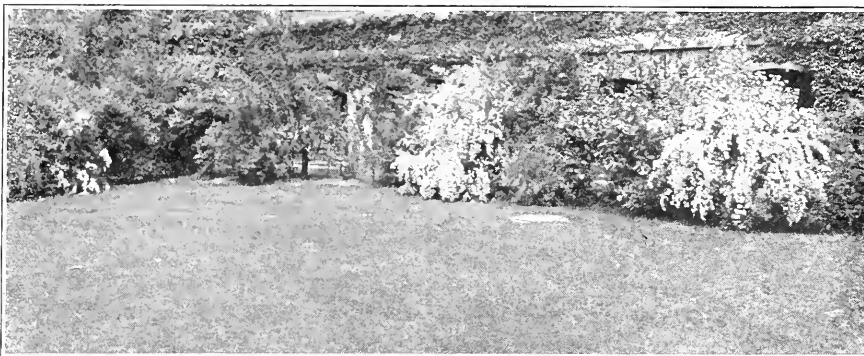
Use few varieties and a considerable number of each. Use specimen plants sparingly.

Well mowed and neatly edged lawns require shrubs that are neat in outline, with interesting foliage, flowers or fruit and that make a compact mass. The taller shrubs need lower growers in front and the texture of the foliage should harmonize, avoiding the placing of shrubs with fine texture of foliage in front of those of a coarser nature.



A Carefully Laid-Out Planting.

Lawn or border plantings are more difficult to arrange so that they will be in harmony. Whether a hedge is to be used to enclose the property or a part of it, whether groups or shrubs should be placed at the corners in the front lawn or along walks or drives, depends upon the property. The shrubs on the borders should be arranged to avoid stiff, regular lines, the taller growing in the rear, smaller growers in front.



If the house is set close to the ground, plantings are made only at the corners; otherwise there is need of low-growing shrubs like the Japanese Barberry, Deutzia Gracilis, Deutzia Lemoinei, Hypericum, low-growing Spireas, along the foundation, with medium growers at the corners like Golden Bell, Hydrangeas, White Kerria, Spirea Van Houttei, Weigela. Make the outline sinuous, extending out at the corners.



A Good Planting for Low Foundation.

## Shrubs

**S**HRUBS are the most important ornamentals and give quickest results. They are invaluable as specimens; in groups or continuous borders; as screens against objectionable views or to secure privacy; as barriers or windbreaks; for flowering effects, for attractiveness of foliage or fruit. They have the greatest range of color and bloom, and increase in attractiveness, usefulness and value from year to year. They relieve the harshness where house and lawn meet and the sharpness of corners. The home nestles cozily in a nest of green, instead of springing suddenly from the lawn like a Jack-in-a-box.



Lawn View and Shrubbery Planting.

### Planting Distances

One must look ahead and picture in mind the effect when plants are mature, generally about three years.

For planting in masses or groups, spacing varies with variety and effect required:

	Close Planting	Normal Distance
Large shrubs	3 ft. apart	4 to 5 ft. apart
Medium shrubs	2½ ft. apart	3 to 4 ft. apart
Low shrubs	2 ft. apart	2½ ft. apart

### Sizes of Shrubs

In the purchase of nursery shrubs the average sized plants are better for transplanting than extremely large sizes. The latter have to be pruned and cut back severely and will require as much time to produce the desired effect as the average sized. Bear in mind that a small specimen of large growers like Althea or Mock Orange would be large for small growers like Crimson Spirea or Deutzia Gracilis.



High Bush Cranberry. Valuable for red berries Fall and Winter.

### Preparation of Soil

A shrub or plant crowded into a hole dug out of the sod cannot be expected to produce satisfactory results. Beds should be dug at least a foot deep and the soil made loose and friable. Unless the soil contains plenty of fertility, well-rotted manure should be thoroughly mixed with the dirt, but never put in contact with the roots.

### Planting Seasons

Plants can be moved with greatest success during their dormant period unless transplanted with a ball of earth about roots. Shrubs are dormant after buds have ripened and leaves have withered or dropped. This varies with different seasons and varieties.

Within a radius of 300 miles of Kansas City, Mo., planting is done ordinarily through November up to the middle of December, and from about March 15th to May 1st. Further South planting is done later in fall and during winter. The earlier planting is done when soil is in good condition the better will be the results.

Most trees cannot be planted close to a house without robbing it of light and air, but tall shrubs, as a background for lower ones grouped around them, take off the sharpness of the corners, and let the sunshine stream in at the windows. The tall shrubs planted as a boundary make an effectual screen, and even on the larger estates an undergrowth of shrubbery is usually planted under the trees along the boundary. Shrubs are the natural complement of trees, filling in the gap between their branches and the ground, and it is possible to get homelike results from shrubs that it would take years to acquire with trees alone.

It is cheaper to use shrubs to hide a steep bank or a deep cavity than it is to grade them. Many a house set on a narrow ridge or hilltop would appear to be less in danger of falling over the edge if the slopes around it were broadened by shrubs.

### Pruning When Transplanted

Shrubs with heavy tops should have at least one-third of the tops removed. Some reduce the tops by removing entirely some canes, others partly cut back all tops. This pruning should be done in early spring before growth starts, if planting is done in the fall.

### Planting

If not ready to plant when stock arrives, handle as described on page 7. Some "puddle" roots to prevent drying out from sun or wind. This is dipping roots in a molasses-like mixture of water and loamy soil.

Bruised or broken roots must be cut off smoothly.

Set plants at about same depth as they stood in nursery. In lighter soil plant a little deeper.

Pack good soil firmly about roots. Wet soil, if needed, when hole is partly filled. Then shortly after, unless ground is moist, shrubs should be watered, but in heavy soils too much water will injure the plants.

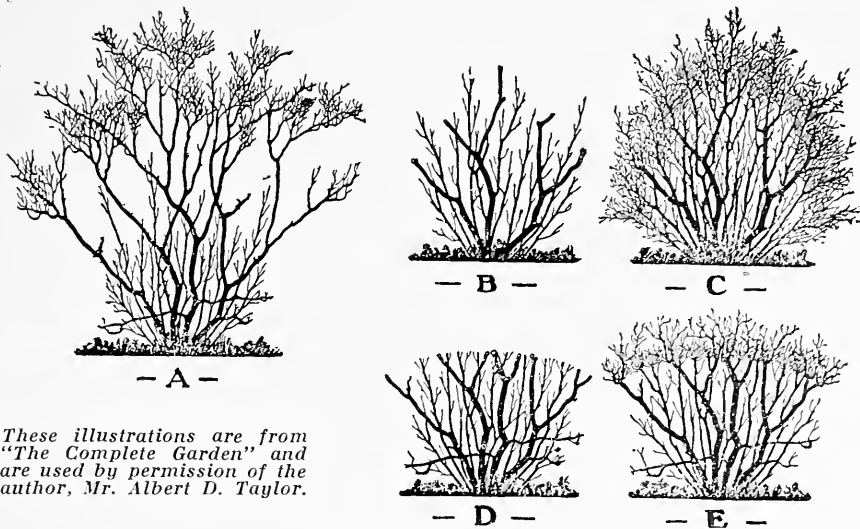
Leave soil level with surface of ground, except a ring of dirt may be left to form a basin for watering.

### Winter Protection

It is alternate freezing and thawing that does the damage. Prevent this by a heavy mulch of straw, leaves or manure put on *after* ground freezes.

### Care of Shrubs and Trees After Planting

Keep surface soil loose and moist and at even temperature by a 3 to 4-inch mulch of manure or by keeping a dust mulch by repeated cultivations. During a drought, water thoroughly even though mulch is applied.



These illustrations are from "The Complete Garden," and are used by permission of the author, Mr. Albert D. Taylor.

Fig. A shows a large, overgrown shrub which is "leggy," i. e., presents a bare effect at the base. Flowers are borne in the top branches on the old wood.

Fig. B. The same shrub properly pruned to permit the new shoots to develop from the base of the shrub and to form a new top.

Fig. C. The same shrub two or three years after proper pruning, a more handsome shrub in form and with better bloom.

Fig. D shows incorrect pruning of shrub in Fig. A.

Fig. E shows the results of incorrect pruning illustrated in Fig. D.

## Descriptions of Shrubs

**ALTHEA or ROSE OF SHARON** (*Hibiscus Syriacus*)—These popular shrubs have a compact, upright growth, attaining a height of 8 to 12 ft. Abundant flowers in white, pink or red, according to variety, appear in July to September when few other shrubs are in blossom. Valued as specimens, in shrub masses, as screens and for hedges, trimmed or untrimmed. They start growth slowly after transplanting, sometimes showing no signs of life for 30 days.

**ARROWWOOD** (*Viburnum Dentatum*)—Attractive green leaves turning red in fall, white flowers in May followed by small black berries. Endures shade, dry or moist soil and grows 6 to 8 ft.

**BARBERRY, JAPANESE** (*Berberis Thunbergi*)—One of the most valuable all-purpose shrubs, will grow in almost any soil, in sun or shade, dense growing; three to five feet; perfectly hardy. The leaves are small, green in early spring and summer, scarlet in fall into winter. The twigs are thorny and covered with scarlet berries in fall and winter. Its yellow flowers are inconspicuous. One of the best shrubs to plant against foundation of house or porch, in front of taller shrubs and the best low hedge.

**BARBERRY, BOX** (*Berberis Thunbergi Minor*)  
A dwarf form which makes a small, compact hedge one to two feet high.

**BUSH CLOVER** (*Desmodium Penduliflorum*)  
—Valuable for great profusion of pea-shaped, rose-purple flowers in September to late October. Grows 2 to 3 ft.; tops die down in winter. Useful in shrub masses or borders.

**BUTTERFLY BUSH** (*Buddleia*)—This shrub, 3 to 6 ft., is valued for its dark blue "lilac" flowers borne in long spikes in late July and August. It is usually cut back to the ground in late winter, and makes a quick, bushy growth.

**CORALBERRY or INDIAN CURRANT** (*Symphoricarpus Vulgaris*)—This shrub grows 3 to 5 ft., has good foliage till late in fall; graceful, arching branches studded with small clusters of dark red berries that remain all winter. The small green flowers in August are inconspicuous. Endures shade and dry soil. Excellent for banks to prevent erosion.

**DEUTZIA GRACILIS**—Called slender or Dwarf Deutzia. Dense, upright grower, 2 to 3 ft., with abundant white flowers in April or early May. Very hardy. Useful as edging for walks and for garden borders and in front of shrub masses. Endures partial shade.



Deutzia, Lemoinei. One of the Best Low Shrubs.

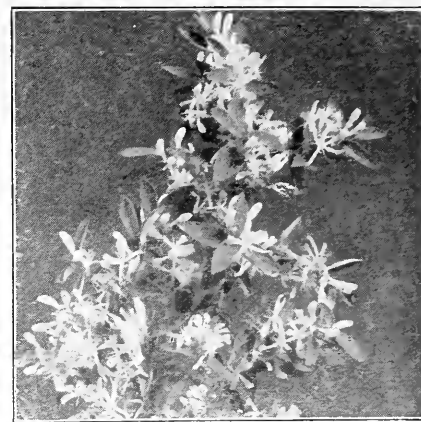


**Deutzia, Pride of Rochester.**

**DEUTZIA LEMOINEI**—A spreading grower, 3 to 6 ft., with showier and later white flowers than *Gracilis*. Endures partial shade.

**DEUTZIA, PRIDE OF ROCHESTER** (*Deutzia Scabra*)—Upright, fast grower, 6 to 8 ft. Flowers in large panicles are pinkish white in late May.

**DOGWOOD, SIBERIAN** (*Cornus Alba Sibirica*)—Valued especially for coral-red stems. Some of older stems should be cut out each spring to encourage new growth that shows color best. It has white flowers in May and white berries into winter. It is fast growing, 6 to 8 ft., and is used for screen effects. Endures partial shade. Other varieties have grey, green and yellow bark or twigs.

**Honeysuckle, Bush (*Lonicera Morrowi*).**

**EUONYMUS WINGED** (*Euonymus Alatus*)—Valuable for its compact symmetrical form, good foliage, turning brilliant red in fall, and for red berries in autumn. Twigs have thin, corky ridges or "wings." Used in border plantings or as specimens. Can be sheared.

**FLOWERING PLUM** (*Prunus Triloba*)—Valued for its wealth of double pink flowers on slender branches in late April or early May.

**GLOBE FLOWER** (*Kerria Japonica*)—Valuable for beautiful yellow flowers in May, for bright green foliage in summer and slender green of twigs in winter. Grows 4 to 5 ft.

**GOLDEN BELL, BORDER** (*Forsythia Intermedia*)—The Golden Bells are hardy, fast growing shrubs with good foliage which follows showy yellow flowers. This variety, *Intermedia*, is the tallest grower, has compact, heavy foliage which holds its dark green color late in summer. Used in mass and border plantings; 6 to 8 ft.

**GOLDEN BELL, FORTUNES** (*Forsythia Fortunei*)—This variety, *Fortunei*, grows 6 to 8 ft., has handsome broad green leaves and more erect branches. Used in mass and border plantings.

**GOLDEN BELL, GREENSTEM** (*Forsythia Viridissima*)—Valuable for yellow flowers, dark green branches in winter and purplish leaves in autumn. Used in mass or border plantings; 6 to 8 ft.

**GOLDEN BELL, WEEPING** (*Forsythia Suspensa*)—Is used to hang over walls or trail on banks, as it has an arching habit of growth with long, trailing branches.

**Globe Flower (*Kerria Japonica*).**

**GOLDEN ELDER** (*Sambucus Canadensis Aurea*)—Valuable for golden foliage throughout the summer. Grows 8 to 12 ft.

**HIGH-BUSH CRANBERRY, AMERICAN** (*Viburnum Opulus Oxycoccos*)—Valuable for good foliage and red berries in fall. Bush is open, graceful, spreading, 8 to 12 ft. tall. White flowers in flat clusters in May. Endures shade.

**HONEYSUCKLE, MORROW'S** (*Lonicera Morrowi*)—The Bush Honeysuckles are hardy, fast growing, have fine foliage and useful in any shrub grouping. Morrow's grows 6 to 8 ft., broad and spreading; its white flowers are not showy but are followed by attractive red berries that hang on into winter. Endures partial shade.

**HONEYSUCKLE, TATARIAN** (*Lonicera Tatarica*)—There are a number of varieties producing an abundance of flowers, white, pink or red, followed by fruits. They have compact, heavy foliage which hangs on late. Endures partial shade.

**HONEYSUCKLE, WINTER or FRAGRANT** (*Lonicera Fragrantissima*)—Pinkish-white, fragrant flowers appear before the leaves, followed in summer by scarlet berries. Holds green leaves into winter. Endures partial shade.

**HYDRANGEA "HILLS OF SNOW"** (*Hydrangea Arborescens Grandiflora*)—The Hydrangeas are valuable for showy flowers in mid and late summer and are used in groups and in masses with other shrubs. "Hills of Snow" have huge, dense balls of small white flowers in June and July. Endures partial shade. Grows 4 to 6 ft. tall and is pruned in late winter or early spring severely for large flowers, more lightly for greater quantity of smaller blossoms.

**Hydrangea Arborescens (Hills of Snow).**



**HYDRANGEA, PEEGEE** (*Hydrangea Paniculata Grandiflora*)—The large clusters of white flowers are very showy from July till September, and change to pink and bronze after frost. Grows 6 to 8 ft. or more in height, is pruned severely for large flowers, lightly for many and small panicles. Endures dry soil. Grown in bush and also tree form.

**HYPERICUM, GOLDEN ST. JOHNSWORT** (*Hypericum Aureum*)—A stiff, dense shrub 2 to 3 ft., with bright yellow flowers in July and early August; globe shaped top and grey-green leaves. Endures partial shade.

**HYPERICUM, HYBRID ST. JOHNSWORT** (*Hypericum Patulum Henryi*)—Grows 2 to 4 ft., has quantities of yellow flowers in July and August and holds its neat foliage late into autumn.

**HYPERICUM, SHRUBBY ST. JOHNSWORT** (*Hypericum Prolificum*)—Grows 2 to 3 ft., with dense, dark green leaves and yellow flowers in July and August. Endures sandy soil.

**HYPERICUM, GOLDFLOWER** (*Hypericum Moserianum*)—This variety of St. Johnswort is more graceful than Aureum, has glossy green foliage, but flowers are smaller. Endures shade. Not as hardy as above varieties.

#### LILAC—*Syringa*

**Common Purple** (*s. vulgaris*) is the well known purple fragrant variety.

**White Lilac** (*s. vulgaris alba*) is also fragrant, but flowers are white.

**Persian Lilac** (*s. persica*). They grow 4 to 6 ft. tall, have small foliage and flowers in purple or white.

**Hybrid Lilac**. Grows 6 to 8 ft., have large flower clusters, single or double, later in May and are very fragrant. They may be had in various colors.

**PRAIRIE ROSE** (*Rosa Setigera*)—A vigorous grower, 4 to 6 ft., hardy, with recurving and trailing stems. Large pink flowers in July.



Snowball (*Viburnum Opulus Sterile*).

#### SNOWBALL (*Viburnum Opulus Sterile*)

—An old-time favorite with showy white flowers in large, globular clusters in May or June; grows 8 to 12 ft.

**SNOWBERRY** (*Symphoricarpos Racemosus*)—Valuable for good foliage and for white berries into winter. Flowers white in July are inconspicuous. Endures partial shade; grows 3 to 6 ft. Used for border plantings, for low, unsheared hedge and on banks to prevent erosion.

**SPIREAS** (*Spiraea*) — These indispensable shrubs vary in size, habits of growth, color and season of blooming. They do best on fertile soils and sunny exposures.

**BILLIARD'S SPIREA** (*S. Billiardi*)—Bears pink flowers in spikes in midsummer; upright grower, 6 to 8 ft.

**BRIDAL WREATH SPIREA** (*S. Prunifolia*)—A graceful shrub with white flowers in great profusion in April, foliage bright green, turning to orange-red in fall; grows 6 to 8 ft. Variety *Flore Pleno* has double flowers.

**CRIMSON SPIREA** (*S. Bumalda Anthony Waterer*)—Flowers nearly all summer, bright red in flat clusters, narrow leaves, upright grower, 1 to 2 ft. Often used for edging walks and for garden borders.

**DWARF WHITE SPIREA** (*S. Callosa Alba*)—The white flowers in flat clusters are borne nearly all summer. Grows 2 to 3 ft. Often used for edging walks and for garden borders.

#### PRIVET (*Ligustrum*)

—This class of shrubs stands well the smoke and dust of city conditions, endures shade, has compact, heavy foliage, stands severe pruning, and if unpruned has white flowers followed by black or blue-black fruit.

#### AMUR PRIVET (*L. Amurense*)

—Has good autumn color, evergreen in the South, is used for hedges, in border plantings and for screens. Grows 6 to 8 ft. or more. One of the hardiest. Berries are black.



Rosa Rugosa—Alba.

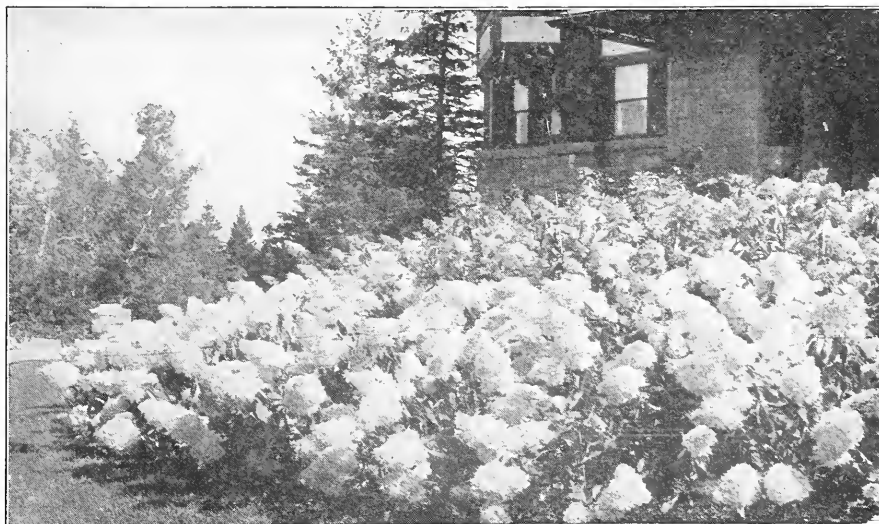
**CALIFORNIA PRIVET** (*L. Ovalifolium*)—Most widely used as a hedge plant. The tops sometimes winter kill, but if cut back to the ground, quickly make an even better hedge. Handsome dark green, glossy foliage, half evergreen. Good autumn color.

**IBOTA PRIVET** (*L. Ibota*)—The leaves are grayish green flowers white, berries blue black. Useful as hedge or border planting.

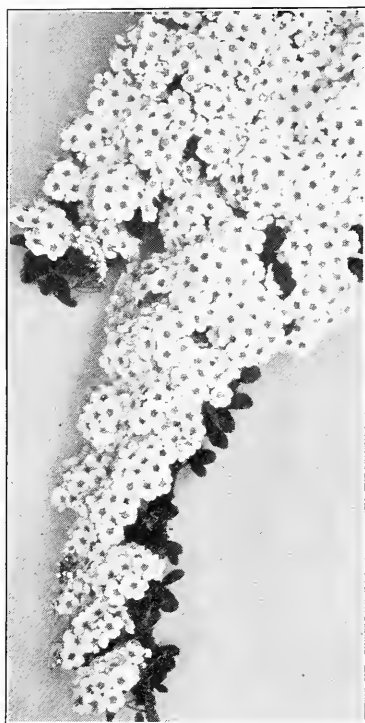
**REGELS PRIVET** (*L. Ibota Regelianum*)—This shrub is useful for border planting and low-sheared edgings for walks and for garden borders, and to fill in with other shrubs which are more showy in flower or fruit. It has white flowers and blue-black berries.

**QUINCE, JAPAN** (*Cydonia Japonica*)—Attractive for scarlet-crimson flowers in April, and glossy green foliage which hangs on well into fall. Used as specimens and for hedges. 4 to 6 ft.

**ROSE, RUGOSA** (*Rosa Rugosa*)—Valuable for flowers, white or red, in May, for shining green, wrinkled foliage and red fruits hanging on into winter. Very hardy, endures light soils; 3 to 5 ft. Makes attractive low, unsheared hedge and is used also in groups and with other shrubs.



Hydrangea Paniculata Grandiflora.

**Spirea Van Houttei.**

Flowers and foliage are very attractive, seen close or at a distance. See pictures on front and back covers and on page 47.



**SNOW GARLAND (*S. Thumbergi*)**—A spreading grower, 3 to 6 ft., with feathery light-green leaves and white blossoms in profusion in April. Foliage turns to orange-scarlet in fall.

**VAN HOUTTE'S SPIREA (*S. Van Houttei*)**—The most popular shrub. It is valuable as specimens, in groups, in border plantings, and for hedges. The branches are slender, drooping, covered with white flowers in April or early May, and the leaves are small and light green. It grows 6 to 8 ft. and is unsurpassed in gracefulness and beauty.

**SUMAC, FRAGRANT (*Rhus Canadensis Aromatica*)**—This low-spreading shrub, about 3 ft. high, is valuable for good foliage turning to red in autumn, and for attractive red berries. Adapted to dry, rocky banks. Used also in border plantings. Leaves are fragrant when crushed.

**SUMAC, SMOOTH (*Rhus Glabra*)**—Attractive fern-like foliage, with red leaves and fruit in fall. Grows 8 to 12 ft. Adapted for banks and rocky slopes, and one of the best Sumacs for mass plantings.

**SYRINGA or MOCK ORANGE (*Philadelphus*)**—These old-fashioned shrubs are justly popular for attractive foliage and flowers. They are strong growers in sun or partial shade.

**SWEET MOCK ORANGE (*Philadelphus Coronarius*)**—this is the well-known Mock Orange with fragrant white flowers in May. Grows 8 to 12 ft., endures partial shade. Used for hedge in shady places.

**GOLDEN MOCK ORANGE (*P. C. Aureus*)**—Valuable for showy golden foliage and dwarf habit, grows 3 to 5 ft. Used for edging walks and for garden borders.

**LEMOINES MOCK ORANGE (*P. C. Lemoinei*)**—More graceful, lower growing, 6 to 8 ft., and smaller leaves than Sweet or Common Mock Orange. White flowers in June are very fragrant.

**TAMARISK, AFRICAN (*Tamarix Africana*)**—A graceful shrub or small tree, 8 to 12 ft., with feathery foliage and light pink flowers in May.

**Weigela Rosea.****Syringa, or Mock Orange (*Philadelphus Coronarius*)**

**WEIGELA, EVA RATHKE**—Large trumpet-shaped crimson flowers in May and June. Bush is upright, but more spreading with age, grows 6 to 8 ft. tall. Very effective in groups and borders.

**WEIGELA ROSEA**—Abundant, showy flowers vary from white to deep rose pink in May or June. Grows 6 to 8 ft. Very effective in groups or in mass or border plantings.

**WHITE KERRIA (*Rhodotypus Kerroides*)**—Valuable for bright green foliage and white flowers in May and black seeds which hang on all winter. Endures shade; grows 6 to 8 ft. tall; hardy.

## Hedges

**H**EDGES are desirable for their beauty, for screens, for windbreaks and for barriers. They are also used effectively to outline flower gardens and for edging garden walks, pools, and planting beds.

Some make a dense, solid growth and may be kept sheared in a formal shape. They are cheaper and more attractive than iron or picket fences that require painting.

Open-growing shrubs are more graceful and attractive but do not make as good barriers.

The Japanese Barberry, Privets, and Spirea Van Houttei are used for hedges more than any other plants.

For edging walks and for garden borders the following are desirable: Deutzia Gracilis grows 2 to 3 ft., has white flowers in May, is planted 12 to 18 inches apart and is not trimmed; Crimson Spirea (Spirea Anthony Waterer) grows 1 to 2 ft., has bright red flowers all summer, is planted 8 to 12 inches apart and is not trimmed; Regal's Privet grows 3 to 6 ft., holds foliage into winter, is planted 8 to 12 inches apart and is kept trimmed to the desired height.

Among other shrubs used for hedges are Althea, Golden Bell (upright), Common Lilac, Mock Orange, planted about 2 feet apart, and Japan Quince, Rugosa Roses, Snowberry planted 15 to 18 inches apart.



**Barberry (Japanese). The Best Low-Growing Protective Hedge—Requires no Attention.**

**JAPANESE BARBERRY**—Grows 3 to 4 ft. Red berries in fall and winter. Plant 8 to 12 inches apart. The best small hedge plant. Also used for edging drives, walks, and for garden borders. Usually pruned lightly.



**Privet. Most Widely Used for Hedges.**

**CALIFORNIA PRIVET**—Grows 8 to 12 ft. Holds foliage into winter longer than other Privets. Plant 8 to 12 in. apart. Trim as desired. It sometimes dies back to the ground in severe winters, but if tops are then cut off entirely it soon makes a new and even better hedge.

**AMOR PRIVET**—Grows 8 to 12 ft. Very hardy. Plant 8 to 12 in. apart. Trim as desired.

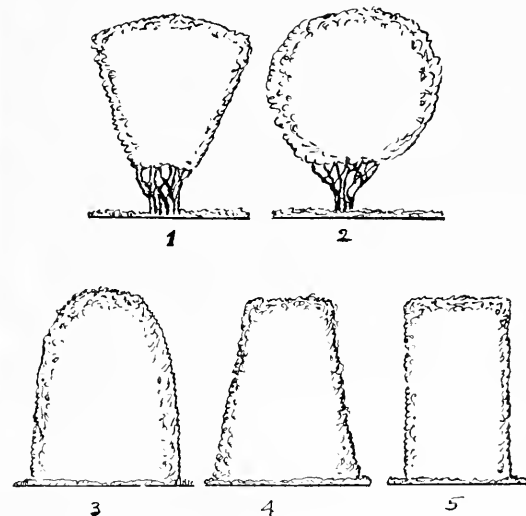
**IBOTA PRIVET**—Grows 8 to 12 ft. Hardy. Plant 8 to 12 inches apart. Trim as desired.

### Planting Privet

Dig a trench about 12 inches wide and 18 inches deep. Put well-rotted manure or bone-meal in the bottom and cover with dirt. Set the plants a few inches deeper than they stood in the nursery and tramp good soil about the roots. Cut the tops back to within 4 inches of the ground.

### Trimming Hedges

Trim in spring before growth starts, and one, two or three times in summer. Figs. 1 and 2 illustrate unattractive forms of hedges. Figs. 3, 4 and 5 are correct forms. Hedges do best if kept with the widest part at the base. The best form is Fig. 3.



**Spirea Van Houttei. Makes a Very Graceful, Free-Growing Hedge.**

**VAN HOUTTE'S SPIREA**—Grows 6 to 8 ft. Untrimmed. Has graceful arching branches, attractive green foliage and wealth of white bloom in May. Plant 18 to 24 in. apart.



**Hybrid Tea Roses**

The Hybrid Tea Roses bloom more constantly than the Hybrid Perpetuals, but are not as hardy, requiring winter protection north of St. Louis.

**GRUSS AN TEPLITZ**—Dazzling scarlet; fragrant; one of the best deep red roses for continuous bloom; hardy.

**KAISERIN AUGUSTA VICTORIA**—Flowers are full double; creamy white; fragrant; continuous bloomer on long stems. Very hardy.

**KILLARNEY**—Clear, bright pink on long stems; excellent for cutting. Very hardy.

**LA FRANCE**—Light, silvery pink, very double and fragrant. Strong grower, moderate bloomer.

**MADAME CAROLINE TESTOUT**—Large size, bright pink, fragrant. Not a prolific bloomer, but very hardy.

**OPHELIA**—Deep yellow on opening but quickly fades lighter except in the center. Tall but not bushy plant; dependable but not profuse bloomer. Quite hardy. Excellent for cut flowers.

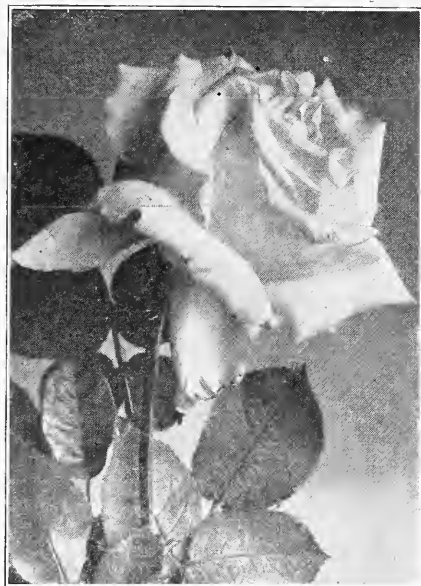
**RADIANCE**—One of the best and most popular pink roses. Grows bushy and tall, is one of the hardiest, resistant to disease and a liberal bloomer.

**SUNBURST**—Bronze-yellow; fine for cutting. Growth low and somewhat spreading. Has few thorns.

**Tea Roses**

**MAMAN COCHET**—The best of the tea roses; moderately hardy; rosy, coral-pink; large, exquisitely tapering buds, very fragrant; continuous bloomer.

**WM. R. SMITH**—Silvery white and pink toned with peach-pink flowers freely produced. Foliage is sparse but very healthy, bush branching; long, strong stems; one of the hardiest Teas.

**Maman Cochet****Hybrid Perpetual Roses**

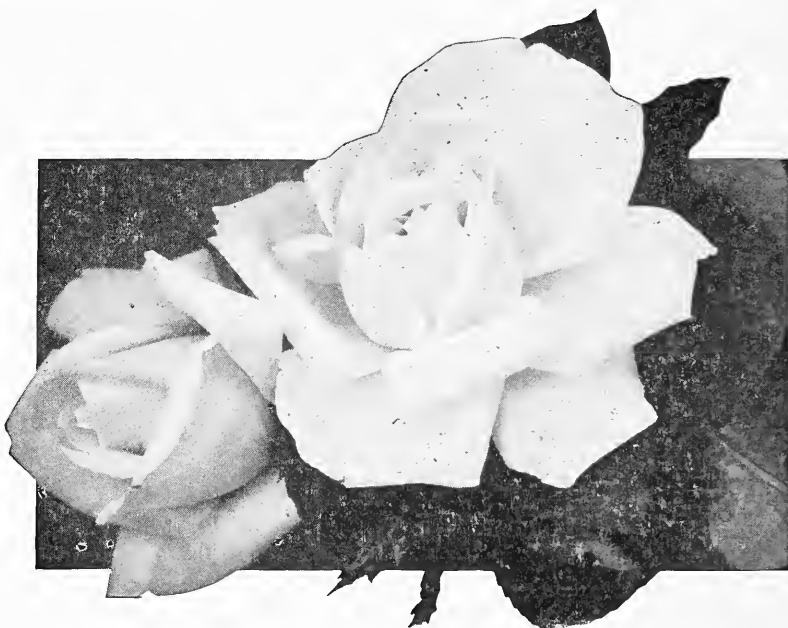
This class do not require winter protection. They bloom very profusely in June and early July and again in the fall if properly pruned and fed.

**MARSHALL P. WILDER**—Deep dark red; large perfect flowers good for cutting; a vigorous grower; fragrant; hardy.

**FRAU KARL DRUSCHKI**—"Snow Queen." White American Beauty. Universally acclaimed the best white rose. A pure snow-white double flower, often 4 inches or more across and last a long time. Fine for cutting. Blooms almost continuously. Strong, vigorous grower, often 5 ft. or more in a season. It is best pruned moderately. Perfectly hardy.

**GENERAL JACQUEMINOT**—"General Jack" is one of the most popular red roses; bright crimson-scarlet, fragrant; perfectly hardy. Needs quite severe pruning. Good for cutting.

**PAUL NEYRON**—Very large, fragrant, bright clear pink. Perfectly hardy and a strong grower.

**Snow Queen (Frau Karl Druschki) the Favorite White Rose****Dwarf—Polyantha Roses**

These are perfectly hardy, constant and profuse bloomers in clusters nearly all summer, bushy growth of 18 to 24 inches; useful as bedding roses, to edge-garden borders or walks, and in front of shrubbery masses. Can be transplanted to pots in fall to furnish winter blooms indoors. Prune lightly in late winter or early spring.

**ANNIE MILLER**—Brilliant, shining pink flowers, larger than Baby Rambler.

**CRIMSON BABY RAMBLER**—Bright crimson pink.

**BABY DOROTHY**—A beautiful shell pink.

**Rugosa Roses**

The hardiest of all roses, very thorny, with shining, dark green, very wrinkled leaves; will grow almost anywhere, even on barren, wind-swept slopes and seashore sand. Seldom attacked by insects or diseases.

Excellent for hedges, for planting with other shrubs or as specimens. They require little attention except thinning out the dead wood and keeping them in bounds.

**CONRAD F. MEYER**—Large, fragrant, silvery pink flowers, in June and occasional blooms thereafter. Should be planted not less than 3 ft. apart. Its 6 to 10 ft. growth may be trained over an archway or against a building.

**ROSA RUGOSA ALBA**—Large, white, fine-petaled flower, followed by attractive orange-red seed pods; a dense grower, 4 to 5 ft. tall.

**ROSA RUGOSA RUBRA**—Large, very fragrant, bright pink to deep carmine flowers, followed by orange-red seed pods. A dense grower, 4 to 5 ft. tall.

**Gruss au Teplitz**



## Climbing Roses

They are very hardy, resistant to insects and disease, vigorous in growth, making canes 10 ft. or more in height, and adaptable to many uses—trained on a trellis, a porch, a house, over banks, on stakes 4 to 8 ft. high, or even allowed to grow at will as a rambling bush.

**CLIMBING AMERICAN BEAUTY**—Rose crimson flowers in profusion suitable for cutting. A vigorous grower, very free from attacks of insects and disease. Older canes should be pruned out each year.

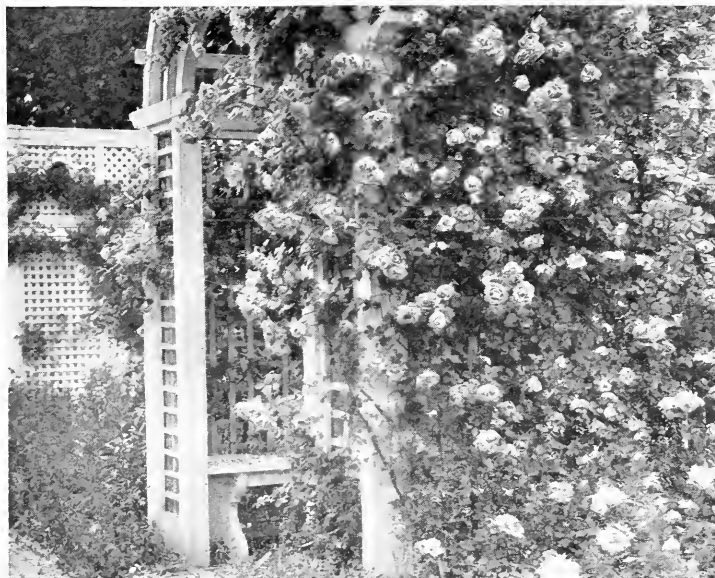
**DR. VAN FLEET**—Pure apple-blossom-pink flowers, good for cutting. A very profuse bloomer.

**SILVER MOON**—Large, silvery white, with yellow stamens. Foliage glossy, dark green; very vigorous grower.

**DOROTHY PERKINS**—Double, shell-pink flowers in clusters; vigorous and dependable.

**EXCELSA**—Sometimes called "Red Dorothy Perkins"; far superior to the old Crimson Rambler. Radiant, blood-red double flowers in large clusters. Very vigorous and quite free from attacks of insects and disease.

**PAULS SCARLET CLIMBER**—Bright, vivid scarlet double flowers in clusters of three to six. No other rose can compare with it in brilliancy of color.



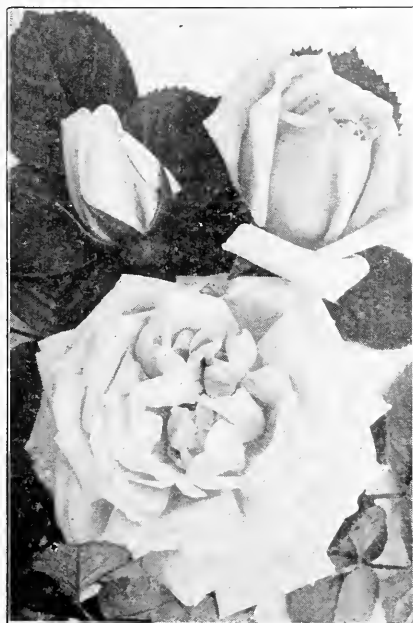
Climbing American Beauty Rose.

## Cultural Directions

Roses should have a sunny location, protected from cold north winds and away from roots of shade trees.

The soil should be heavy enough to retain moisture, rich enough to provide ample plant food, and yet must drain at the bottom. Hybrid Perpetuals and strong growing Hybrid Teas do better in a soil with 40 to 70 per cent clay. If the soil is not fertile a large quantity of well-rotted manure should be spaded in, digging the soil deep and pulverizing thoroughly.

If not well drained, it will pay to put in six inches of crushed stone or cinders with 18 to 24 inches of rich soil on top. The surface of rose beds should not be above the surrounding ground. They thrive best in narrow beds, 12 inches wide, but up to 3 ft. is practical, with turf paths 2½ to 3 ft. wide between the beds.



Conrad F. Meyer. The Hardest Rose.

Planting distances vary with variety 15 inches to 3 ft.; a good average is 20 to 24 inches.

If upon arrival, the roots seem very dry, soak them thoroughly in water; if the tops also are too dry, bury the entire plant in the ground for two or three days. Avoid exposure of roots to sun or drying winds. Set the plants not more than 2 or 3 inches deeper than they stood in the nursery. Press or tamp the soil closely about the roots, which should be spread out. The tops are usually pruned before shipment—Hybrid Perpetuals to about 6 or 8 inches above the crown, Teas and Hybrid Teas not quite so severely, and Polyanthas not at all, or very lightly if stems are too numerous.

The ground should be kept stirred an inch or two. If water is needed, wet the soil thoroughly, early morning is the best time. Ground bone, pulverized sheep manure and well-rotted cow manure are good fertilizers. Heavy annual manuring is needed, especially for cut flowers.

Pruning should be done very early in the spring, cutting back Hybrid Teas severely, the strong shoots to within 12 inches of the ground, the old shoots entirely. Hybrid Perpetuals produce the best individual blooms if cut back to within a foot of the ground, less severely for quantity of bloom. Climbing Roses are pruned as soon as the flowering season has passed, cutting out the old flowering shoots and leaving the young growth to develop.

Protection from severe winter weather is provided by mounding up the soil 6 or 8 inches high about the stem. Then when colder weather approaches, other protecting material, leaves, cornstalks, straw, etc., is added. The object is to prevent too rapid change from one extreme of temperature to another, and to shield the plant from sun and wind. The

coverings should be removed gradually in spring, since unseasonable weather may come later.

The Hybrid Perpetuals, Polyanthas and Rugosas need no protection as far north as St. Louis, except in very severe winters. It is well to throw a little coarse material over the plants. Climbing Roses may be shielded from the winter sun if desired.

For leaf-eating insects, spray with arsenate of lead, 2 ounces of paste or 1 ounce of powder to 10 quarts of water. For aphids or other sucking insects, use 40 per cent nicotine sulphate, one teaspoonful to 1 or 2 gallons of water in which one-half ounce of soap has been dissolved. Every insect must be covered. For mildew and other fungous diseases spray with potassium sulphid, one ounce to 3 gallons of water, adding 3 ounces of any good mild soap. Bordeaux Mixture, obtainable at drug stores, applied early is a good preventive of mildew.



Dorothy Perkins.

## Ornamental Trees

IT IS well to remind ourselves of the value of trees and to appreciate the foresight and thoughtfulness of those who have made it possible for us to enjoy their beauty, their cooling shade, or protection from winter winds. Compare the comfort and beauty of well-shaded suburban avenues with downtown city streets.

Trees help to make our outdoor living rooms for leisure or play. They are needed as backgrounds and to frame the house. They add to our pleasure with beauty of form, foliage, flower and fruit, as specimens, in groups and in combination with shrubbery.

As backgrounds they are placed well back of the house line. To frame the house they are planted at both ends forward of the front line of the house. Along straight drives they are set not less than 35 ft. apart, alternately and 5 to 10 ft. from the edge of the driveway. Along curved roads or paths they should be in groups rather than in lines.



Norway Maple (*Acer Platanoides*).

**HARD or SUGAR MAPLE** (*A. Saccharum*)—A slow growing but long-lived tree with beautiful foliage turning red and yellow in early autumn. Excellent for shade and lawns, also as street tree under suburban conditions. Grows over 60 ft.

**NORWAY MAPLE** (*Acer Platanoides*)—A handsome, low-headed, compact growing tree with broad, deep green foliage holding its color late into fall. Valuable for lawns and parks; 30 to 60 ft.

**SILVER or SOFT MAPLE** (*Acer Dasycarpum* [*Saccharinum*])—A very fast growing tree valued for producing quick shade. The wood is brittle and the branches are often broken in storms. The leaves are bright green above and silvery beneath, and turn yellow in fall. Over 60 ft.

**CAROLINA POPLAR** (*Populus Deltoides Monilifera*)—A very rapid growing, healthy, hardy tree with large, glossy, pale to deep green leaves; pyramidal in form; grows 25 to 40 ft. Breaks easily in storms and roots heave up pavements and get into sewer pipes. Useful for temporary results.

**LOMBARDY POPLAR** (*Populus Nigra Italica*)—A narrow, steeple-like tree, strikingly picturesque, attaining a height of 60 ft. or more, and is valuable as specimens, as screens, in mixed plantings for contrast with broader trees, and behind buildings. Rapid growing.

**BOX ELDER or ASH LEAVED MAPLE** (*Acer Negundo*)—A rapid-growing, spreading tree, 30 to 60 ft., which endures dry soil. Often used for windbreaks.

**CATALPA, WESTERN** (*Catalpa Speciosa*)—Has bright green leaves and beautiful white or yellowish-white, fragrant flowers in June. Rapid growing, attaining height of 60 ft. up. The wood is very durable in the ground and is therefore valued for fence posts, poles and railway ties, for which purpose it is grown in groves.

**WEeping WILLOW, WISCONSIN** (*Salix Blanda*)—A hardy tree, 25 to 40 ft., with slender, drooping branches.

**AMERICAN ELM** (*Ulmus Americana*)—This well-known tree is majestic and graceful, with wide spreading head borne usually at considerable height on straight, shapely trunk. Valuable as specimens near house and as street trees, where it is best in open parking space between curb and walk; 80 to 100 ft.; yellow fall foliage.

**PLANE TREES** (*Platanus*)—These majestic trees attain large size, 130 ft. or more, with branches and limbs often creamy white and with large head of dense green foliage. They stand pruning well; good street trees. Rapid growing.

**American Plane** (*P. Occidentalis*)—Commonly called Sycamore, also Buttonball or Buttonwood. Entirely hardy but sometimes susceptible to twig blight.

**Oriental Plane** (*P. Orientalis*)—This is the European variety, has more compact growth than the American, and is not susceptible to twig blight. Many prefer it to American as shade tree and for streets.

**PIN OAK** (*Quercus Palustris*)—Very desirable for lawn, street and park planting. Grows rapidly, 30 to 60 ft. Branches are drooping in form with age. Foliage is deep green, turning to scarlet and yellow in fall.

**RED OAK** (*Quercus Rubra*)—The most rapid growing oak up to 60 ft. or more. Leaves are deeply cut, bright green, turning to red in fall. For lawn or street planting.

**TULIP** (*Liriodendron Tulipifera*)—Sometimes called White-wood or Yellow Poplar. A large, magnificent tree, 60 ft. up; prefers rich soil and needs plenty of room. Glossy green foliage turns yellow in fall; tulip-like, greenish-yellow flowers with orange center appear in June.



White Ash.

**WHITE ASH** (*Fraxinus Americana*)—A quick growing tree with broad, spreading limbs. Good for shade or for street planting; grows over 60 ft.

**GREEN ASH** (*Fraxinus Viridis*)—A shapely, round headed tree with slender, spreading branches; rapid growing; 50 to 60 ft.

## Small Trees

**BECHTEL DOUBLE FLOWERING CRAB** (*Malus Ioensis*)—Grows 8 to 15 ft. Large, double, pink flowers resembling roses, and very fragrant, in late May.

**DOGWOOD FLOWERING** (*Cornus Florida*)—A large shrub or small tree, up to 20 ft. Valuable for white flowers in May, dark green foliage, bright red berries and brilliant autumn color. Grows in sun or shade.

**HAWTHORN, WASHINGTON** (*Crataegus Cordata*)—Small tree, 15 up to 30 ft. Attractive for white flowers in June, for good foliage, and orange-red berries that hang on all winter. Sometimes used for hedges.

**RED BUD** (*Cercis Canadensis*)—A medium size tree, 10 to 15 ft., with irregular head, with mass of small pea-shaped pink flowers before the leaves appear. Leaves are large, nearly round, dark green, turning yellow in fall. Endures shade. Used as specimens or in border plantings.

**UMBRELLA CATALPA** (*Catalpa Bignonioides Nana*)—Dwarf, round-headed tree used for specimens and for formal effects. Can be kept compact and symmetrical by late winter pruning. Grafted on common Catalpa usually 5 or 6 ft. from ground.



Bechtel Double-Flowering Crab.

## CLIMBING VINES

Vines add so much to the beauty, grace and comfort of the home, it is strange they are not used more freely. They are invaluable for toning stiff angles of buildings, to provide shade and flowers over veranda or trellises, to prevent washing on steep slopes and banks, and to cover unsightly objects.

If planted next to walls, dig the soil out for 18 to 24 inches and fill in with good dirt. In such locations they are likely to need watering and fertilizing with bone-meal or well-rotted manure.

Climbing vines are pruned after blooming to remove dead wood and straggling growth, except that vines with ornamental fruit like Japanese Clematis, Virginia Creeper, etc., are cut back severely in the spring.



**TRUMPET VINE**—Valuable for orange-scarlet flowers in midsummer and for light green foliage.

**BOSTON IVY** (*Ampelopsis Tricuspidata Veitchi*)—Bright attractive foliage turning to crimson in the fall; clings firmly even to smooth surfaces; hardy.

**VIRGINIA CREEPER** (American Ivy) (*Ampelopsis Quinquifolia*)—Beautiful, large five-lobed leaves turning brilliant crimson in fall, contrasting handsomely with its blue berries.

**ENGLISH IVY** (*Hedera Helix*)—Has attractive evergreen leaves, waxy, dark green. Clings to walls or trees. Not hardy north. Does best on north or east side of house.

**CLEMATIS, JAPANESE** (*C. Paniculata*)—Bright foliage with countless little star-shaped white flowers, very fragrant; blooms late. Support on trellis; grows ten to fifteen feet.

**CLEMATIS, JACKMANI**—Violet-purple blooms in July and August.

**HONEYSUCKLE, HALL'S** (*Lonicera Japonica Halliana*)—Shiny green foliage; pure white, trumpet shaped flowers with sweet perfume; used to cover fences, embankments, arbors, etc. Blooms in late fall. Hardy. Thrives in heavy soil. Endures shade.

**TRUMPET VINE** (Trumpet Honeysuckle) (*Bignonia Radicans*)—Long, trumpet-shaped orange-colored flowers, beautiful foliage, especially good for covering walls, fences and embankments.

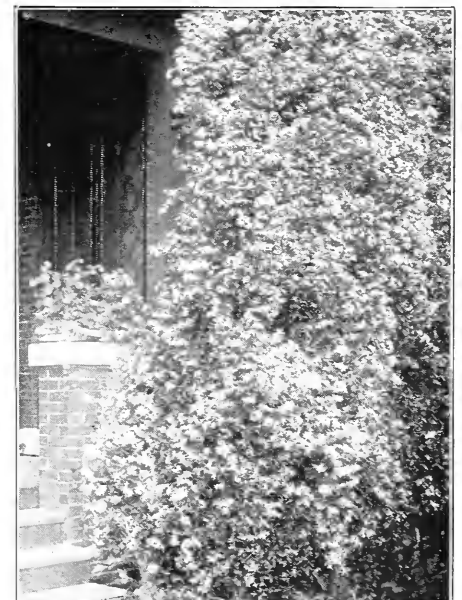
**WISTERIA, JAPANESE** (*W. Multijuga*)—Beautiful foliage, long clusters, pea-shaped, purple flowers; makes a heavy vine; grows very tall.



Ivy and Climbing American Beauty Rose.



Hall's Honeysuckle.



Japanese Clematis.



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### JUST A HOUSE!

Look at this same house on the page opposite.

We would gladly help you as we have many others, including Mr. H. A. Wangerien of Santa Fe, N. Mex., who wrote September 9, 1924:

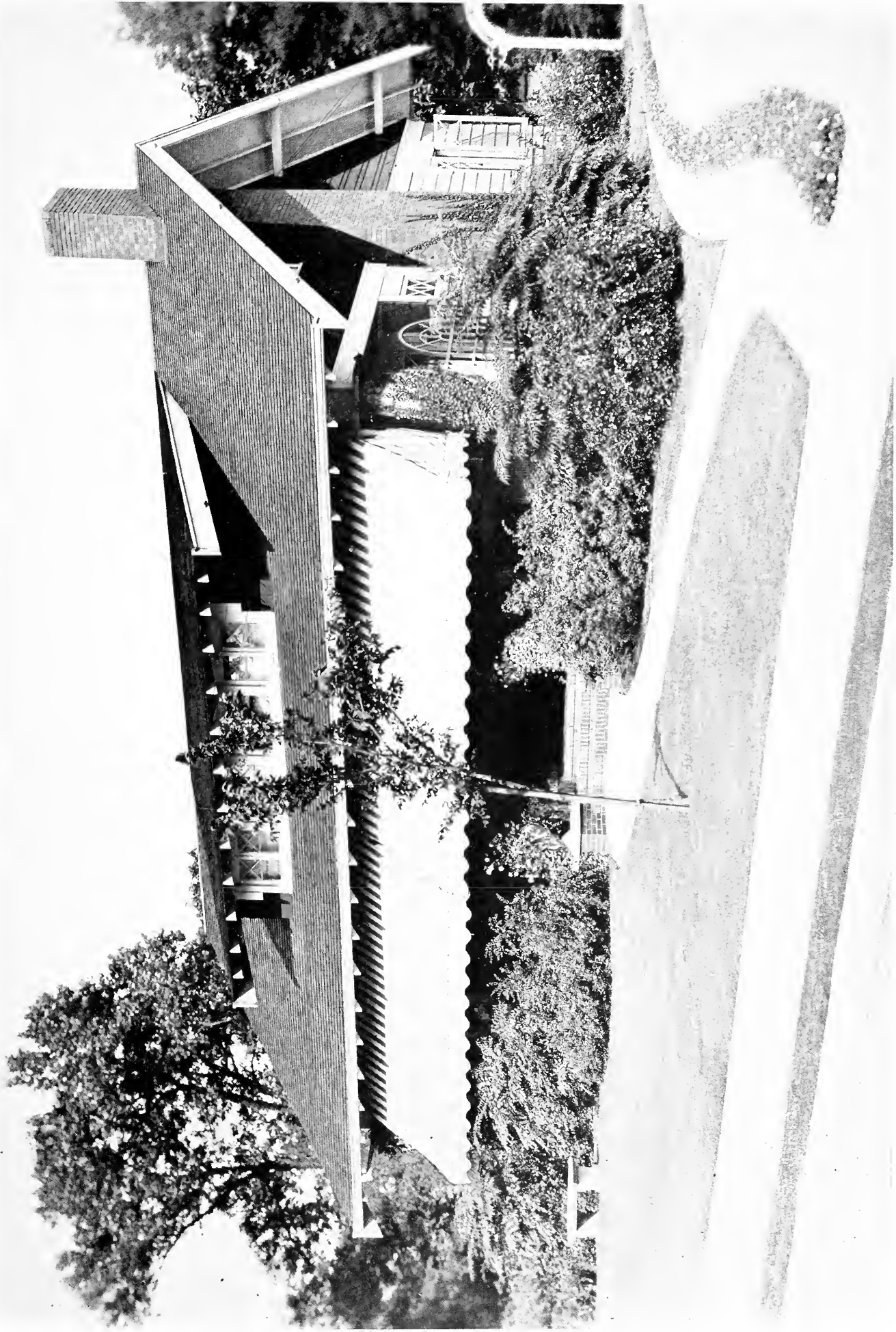
"My grounds are very beautiful, considering all planting was done this spring. Practically everything was furnished by you to my entire satisfaction."

Let us have the information specified on page 41 if you want suggestions. You need not draw the plan to scale, but simply state distances required.



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KANSAS CITY, MO.





***“What a Beautiful Home!”***

*See previous page to realize what a difference a little inexpensive planting makes.*



*Front view of Office and Packing House taken in May, 1924. Spirea in full bloom.  
Trees are Sycamore, White Ash, Black Walnut and Lombardy Poplar.*



*Spirea Van Houttei in all its glory—On our lawn.*

*“Yours for Growing Satisfaction”*  
**NEOSHO NURSERIES CO.**  
 NEOSHO, MISSOURI.